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PROVISIONAL INTELLIGENCE REPORT

THE PRODUCTION AND CONSUMPTION OF RUBBER IN THE EUROPEAN SATELLITES

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FOREWORD

This report, The Production and Consumption of Rubber in the European Satellites, is both an amplification and an updating of the related material in CIA/RR 19, The Rubber Position of the Soviet Bloc, 19 January 1953, S, US OFFICIALS ONLY. Since the publication of the earlier report, information has become available which has changed the estimates of both production and consumption of rubber in the European Satellites. These changes do not, however, materially alter the over-all estimate of the rubber situation of the Soviet Bloc, and the conclusions of the earlier report are still valid.

The available supported information about the technical practices followed in the various rubber-producing plants in the European Satellites does not warrant an industry inputs study based on analogy. The scarcity of reliable information about rubber imports by the European Satellites from non-Soviet Bloc countries and about intra-Bloc trade in rubber and rubber products, makes impossible a significant study of supply. The scope of the present report is consequently limited to production and consumption. The trade information which is available, however, is of sufficient interest and importance to warrant consideration. Therefore, a discussion based on that information is included as Appendix C.

The vehicle tire industry in the European Satellites is important not only as a major consumer of rubber but also as an indicator of technological progress and possible Soviet Bloc intentions. For that reason, the industry is discussed in the text of this report as a significant factor in the consumption of rubber and is also analyzed in some detail in Appendix B.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

CONTENTS

	Page
Summary	1
I. Production	2
A. Synthetic Rubber	2
B. Natural Rubber	4
C. Reclaimed Rubber	4
II. Consumption	6
A. Total Industrial Consumption	6
B. Transportation Goods	8
1. Quantities	8
2. Types	10
C. Nontransportation Goods	10
1. Quantities	10
2. Types	11
III. Stockpiles	12
IV. Intentions, Capabilities, and Vulnerabilities	12
A. Intentions	12
B. Capabilities	13
C. Vulnerabilities	13

Appendixes

Appendix A. Production of Rubber in the European Satellites	15
I. Albania	15
II. Bulgaria	15

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Page

A. Synthetic Rubber 15
B. Natural Rubber 15
C. Reclaimed Rubber 16

III. Czechoslovakia 16

A. Synthetic Rubber 16
B. Natural Rubber 17
C. Reclaimed Rubber 18

IV. East Germany 18

A. Synthetic Rubber 18
B. Natural Rubber 18
C. Reclaimed Rubber 19

V. Hungary 19

A. Synthetic Rubber 19
B. Natural Rubber 19
C. Reclaimed Rubber 20

VI. Poland 20

A. Synthetic Rubber 20
B. Natural Rubber 21
C. Reclaimed Rubber 21

VII. Rumania 22

A. Synthetic Rubber 22
B. Natural Rubber 23
C. Reclaimed Rubber 23

Appendix B. Consumption of Rubber in the European Satellites . 27

I. Size and Importance of Rubber-Consuming Industries 27

A. Albania 27

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Page

B. Bulgaria 27
C. Czechoslovakia 28
D. East Germany 28
E. Hungary 29
F. Poland 30
G. Rumania 31

II. Consumption by Goods Categories 32

A. Transportation Goods 32
B. Nontransportation Goods 32
C. Both Categories 32

III. Types of Rubber Used for Various Types of Rubber Goods 44

Appendix C. European Satellite Trade in Rubber and Rubber Products 47

I. Discussion 47

A. Qualifying Factors 47

1. Imports from Non-Soviet Bloc Countries 47

2. Intra-Soviet Bloc Trade 47

B. Country Dependence on Trade 47

1. Albania 47
2. Bulgaria 48
3. Czechoslovakia 48
4. East Germany 48
5. Hungary 49
6. Poland 50
7. Rumania 50

II. Statistical Tables 51

A. Trade in Natural, Synthetic, and Reclaimed Rubber 51

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

		Page
	B. Trade in Rubber Products	51
Appendix D.	Stockpiling of Rubber and Rubber Products in the European Satellites	81
	I. Stockpiling of Rubber	81
	A. Czechoslovakia	82
	B. East Germany	82
	C. Rumania	83
	II. Stockpiling of Rubber Products	83
	A. Czechoslovakia	83
	B. East Germany	83
	C. Poland	87
Appendix E.	Plant Studies	89
	I. Synthetic Rubber Plants	89
	A. Bulgaria	89
	B. Czechoslovakia	89
	C. East Germany	90
	D. Hungary	90
	E. Poland	91
	F. Rumania	92
	II. Natural Rubber Plants	93
	A. Czechoslovakia	93
	B. Poland	93
	C. Hungary	93
	D. Rumania	93
	III. Reclaimed Rubber Plants	93
	A. Bulgaria	93
	B. Czechoslovakia	94
	C. East Germany	95

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Page

D. Hungary 96
E. Poland 96

IV. Tire Plants 97

A. Albania 97
B. Bulgaria 97
C. Czechoslovakia 98
D. East Germany 102
E. Hungary 104
F. Poland 105
G. Rumania 107

Appendix F. Methodology 109

I. Production 109

II. Consumption 109

A. Transportation Goods 109
B. Nontransportation Goods 110

III. Trade 110

Appendix G. Gaps in Intelligence 111

Appendix H. Sources 113

Tables

1. Estimated Production of Synthetic Rubber in the European Satellites, Selected Years, 1946-55 3

2. Estimated Production of Reclaimed Rubber in the European Satellites, Selected Years, 1946-53 5

3. Estimated Total Production of Rubber in the European Satellites, Selected Years, 1946-53 6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Page

4. Estimated Total Consumption of Rubber in the European Satellites for All Types of Rubber Fabricated Goods, Selected Years, 1946-53 7

5. Estimated Production of Motor Vehicle Tires in the European Satellites, Selected Years, 1946-53 9

6. Estimated Consumption of Rubber in the European Satellites for All Transportation Goods, Selected Years, 1946-53 . . . 10

7. Estimated Consumption of Rubber in the European Satellites for Nontransportation Goods, Selected Years, 1946-53 . . . 11

8. Estimated Production of Synthetic, Natural, and Reclaimed Rubber in the European Satellites, 1946-53 24

9. Estimated Production of Motor Vehicle Tires in the European Satellites, 1946-53 33

10. Estimated Consumption of Rubber for Motor Vehicle Tires and Tubes in the European Satellites, 1946-53 36

11. Estimated Consumption of Rubber for Bicycle Tires and Tire Repair Material in the European Satellites, 1946-53 38

12. Estimated Consumption of Rubber for Transportation Goods in the European Satellites, 1946-53 40

13. Estimated Consumption of Rubber for Nontransportation Goods in the European Satellites, 1946-53 41

14. Estimated Total Consumption of Rubber for All Types of Rubber Goods in the European Satellites, 1946-53 42

15. European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber, 1946-53 52

16. European Satellite Exports of Natural, Synthetic, and Reclaimed Rubber, 1946-53 68

17. European Satellite Imports of Motor Vehicle Tires, 1946-53 72

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Page

18. European Satellite Exports of Motor Vehicle Tires, 1946-53 78

19. Reported Stockpiling of Rubber in Czechoslovakia, East Germany, and Hungary, 1946-52 81

20. Tire Storage Warehouses in Czechoslovakia 84

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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THE PRODUCTION AND CONSUMPTION OF RUBBER IN THE EUROPEAN SATELLITES*

Summary

The rubber industries of the European Satellites contribute substantially to the economy of the Soviet Bloc. The total production of rubber in the Bloc in 1953 was about 356,000 metric tons.** Of this total the European Satellites produced slightly more than 87,000 tons. East Germany, with a 1953 production of 67,000 tons, was the major Satellite producer, and Czechoslovakia and Poland accounted for most of the remainder. Albania had no actual production, and Bulgaria, Hungary, and Rumania produced only small quantities.

Synthetic rubber constitutes the greater part of all rubber produced by the European Satellites. Of the total estimated production of 87,000 tons of all types of rubber in 1953, approximately 77 percent was synthetic. Virtually all of the rest was reclaimed rubber. Production of natural rubber is still in the experimental and pilot-plant stages and was not a considerable factor in 1953.

Most of the synthetic rubber produced in the European Satellites is of the butadiene-styrene type. Only small quantities of neoprene and thiokol are produced, primarily in Czechoslovakia and Poland. Experiments in the production of natural rubber, currently carried on in several of the Satellites, consist of the cultivation and processing of such rubber-bearing plants as kok-saghyz.

Total consumption of all types of rubber by all industries in the European Satellites in 1953 is estimated to have been 133,000 tons. The transportation goods industries, primarily vehicle tire manufacture, consumed about 57,000 tons, and the nontransportation goods industries consumed the remainder.

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 April 1954.
** Tonnages throughout this report are given in metric tons.

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

In 1953, all tire manufacturers in the European Satellites produced about 3,390,000 vehicle tires. Soviet production during the same period was approximately 11 million tires. In recent years a concerted effort seems to have been made to improve the quality and increase the diversity of the tires produced in the European Satellites. There has been a marked trend toward the manufacture of vehicle tires of the larger sizes and of bogey wheel tires and tank tracks.

There are no definite indications of large-scale stockpiling of rubber or rubber goods in the European Satellites. It is known that central depots and storage centers do exist in some areas, but available information is not sufficient to warrant a quantitative estimate of stockpiling.

Available information about the production and consumption of rubber in the European Satellites suggests a trend toward manufacture for military uses but does not justify a firm statement of intentions. The Satellites appear to have a definite capability for expansion of their rubber industries. The total 1953 production of 87,000 tons and consumption of 133,000 tons, compared with 1946 production of 30,500 tons and consumption of 30,000 tons, are a clear indication of such a capability. This indication may, of course, be affected by trade factors which cannot now be evaluated.

The rubber industries of the European Satellites do not appear to be vulnerable to economic proscription. Here again, however, any statement must be qualified by the lack of information about natural rubber imports and other aspects of trade. The major point of vulnerability to either sabotage or military attack is probably the Schkopau Plant in East Germany, which produces a major part of all synthetic rubber produced in the European Satellites.

I. Production.

A. Synthetic Rubber.

Production of synthetic rubber in the European Satellites is largely concentrated in East Germany. Although a synthetic rubber

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

industry exists in both Czechoslovakia and Poland and major production has been planned, their combined production thus far has been only a few thousand tons. Available information indicates that there are only experimental installations in Hungary, Rumania, and Bulgaria.

Estimates of production of synthetic rubber in East Germany are based on both over-all industrial data and detailed information concerning the Schkopau Plant, which produces the entire output in East Germany.* Dismantling caused a drop in production in 1948 and 1949, but under the present rebuilding and re-equipment program the Schkopau Plant has recently increased its 1955 planned goal from 60,000 to 70,000 tons. 1/** It is estimated that production has increased substantially since 1950, as indicated in Table 1. Poland's Six Year

Table 1

Estimated Production of Synthetic Rubber in the European Satellites
Selected Years, 1946-55

Metric Tons

	1946	1948	1950	1952	1953	Plan 1955
Czechoslovakia		300	1,000	1,500	1,700	N.A.
East Germany	23,997	30,700	39,008	56,300	62,000	70,000
Poland		500	1,400	2,700	4,000	13,000
Total	23,997	31,500	41,408	60,500	67,700	83,000

Plan (1950-55) foresees a goal of 13,000 tons of synthetic rubber by 1955, presumably to be obtained mainly by the reconstruction of the former plant in Oswiecim. 2/ A plan to produce 9,000 tons in 1953 has been reported, but actual production is estimated to have been 4,000 tons. 3/

In East Germany the production of synthetic rubber is concentrated mainly in the buna S type (a general-purpose copolymer of

* Plant data are given in Appendix E.
** Footnote references in arabic numerals are to sources listed in Appendix H.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

butadiene and styrene). About 90 percent of production is of this type, but other varieties and types, including buna S-3, buna SS, buna 32, buna 85, Perbunan (buna N), and Igetex, are produced in smaller quantities. Recent reports have shown progress in work on cold rubber and possibly on oil-extended rubber.* 4/ Much attention is also being devoted to Chlorobuna, a chlorinated rubber which is important in wartime as a coating for submarines and mines, providing antisonar protection. 5/

Czechoslovakia is now reportedly concentrating on a butadiene-type rubber. An experimental neoprene plant in Czechoslovakia, in addition to the thiokol plant built in Silesia during World War II, has also been reported.

Estimated production of synthetic rubber in the European Satellites for selected years, 1946-55, is given in Table 1.

B. Natural Rubber.

Since the end of World War II, several of the European Satellites have attempted to obtain rubber from such latex-bearing shrubs as koksaghyz. Information about the areas in cultivation and yields from such plants has been inadequate, and reports of results are often contradictory.

Experimental work on obtaining rubber from latex-bearing shrubs has been reported in progress in Bulgaria, Czechoslovakia, Hungary, Poland, and Rumania. Hungary and Rumania recently have been reported as achieving some success in obtaining rubber from this source. Total production, however, has been small, and the inadequacy of evidence supporting any estimate of that production precludes consideration of natural rubber as a factor in determining total production of rubber in the European Satellites. Additional details of the natural rubber experiments are given in Appendix A.

C. Reclaimed Rubber.

Reclaimed rubber is a product of the processing of scrap vulcanized rubber by mechanical, thermal, or chemical treatments. The types of reclaimed rubber are ground devulcanized scrap; rough,

* Postwar development on these technological improvements reached the production stage in the US in 1951.

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partially plasticized shoddies; and fully plasticized, smoothly refined reclaimed. Reclaimed rubber is used essentially for two major purposes: (1) to extend economically other types of rubber and (2) to provide certain desired characteristics in end items.

In postwar years the European Satellites have endeavored to increase production of reclaimed rubber. Although production is still relatively low in most of the European Satellites, considerable progress has been made in Czechoslovakia and Poland. Some reclaiming facilities are believed to have been available by 1953 in all of the Satellites except Albania. There are, however, no reliable reports of actual production in Hungary and Rumania. Additional details of the production of reclaimed rubber are given in Appendix A.

Estimated production of reclaimed rubber in the European Satellites for selected years, 1946-53, is given in Table 2.

Table 2

Estimated Production of Reclaimed Rubber in the European Satellites
Selected Years, 1946-53

Metric Tons

	1946	1948	1950	1952	1953
Bulgaria			90	150	200
Czechoslovakia	4,500	5,500	6,500	8,000	9,000
East Germany	1,500	2,500	3,300	4,200	5,000
Poland	500	1,900	2,800	4,500	5,200
Total	6,500	9,900	12,690	16,850	19,400

Estimated total production of rubber in the European Satellites for selected years, 1946-53, is given in Table 3.*

* Table 3 follows on p. 6.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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Table 3

Estimated Total Production of Rubber in the European Satellites
Selected Years, 1946-53

Metric Tons

	1946	1948	1950	1952	1953
Synthetic	23,997	31,500	41,408	60,500	67,700
Reclaimed	6,500	9,900	12,690	16,850	19,400
Total	30,497	41,400	54,098	77,350	87,100

II. Consumption.

A. Total Industrial Consumption.

The consumption of rubber by the European Satellites has shown more than a fourfold increase since the early postwar years. Czechoslovakia, East Germany, and Poland continue to be the largest consumers of rubber. Consumption of all types of rubber increased from 30,000 tons in 1946 to 133,000 tons in 1953. Expanded manufacture of rubber fabricated goods has continued, and there has been a corresponding rise in amounts of rubber needed by the industry.

The production of motor vehicle tires is indicative of the industrial development of a country, as most industries are, in varying degrees, dependent on the availability of transportation. Tire production in the European Satellites, which in 1946 totaled about 414,500 units, had grown to over 3,390,000 units by 1953.

The constant growth of the tire industry in the European Satellites, as shown in Table 5,* creates a consumption pattern which is gradually becoming similar to those in the US and UK, where almost two-thirds of the total rubber consumed goes for transportation goods and one-third for nontransportation goods, including footwear. The rubber footwear industry, incidentally, is the second largest consumer of rubber in the European Satellites.

* P. 9, below.

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One of the greatest problems of the rubber industry in the European Satellites has been the short supply, especially in the early postwar years, of many components of rubber fabrication. Critically short were supplies of carbon blacks and rubber accelerators.

Most of the rubber chemicals, such as accelerators and carbon blacks, are now supplied by Soviet Bloc countries. Most of the European Satellites have developed products of importance to the rubber industry, largely because of the interdependence of the Bloc countries for basic raw materials. Most of the Bloc countries appeared to have adequate access to such raw material supplies by 1953, and they can now direct further attention toward technological advancement in the rubber industry.

Total consumption of all types of rubber fabricated goods in the European Satellites for selected years, 1946-53, as estimated from available data, is given in Table 4.

Table 4

Estimated Total Consumption of Rubber in the European Satellites for All Types of Rubber Fabricated Goods a/
Selected Years, 1946-53

Metric Tons

	1946	1948	1950	1952	1953
Albania	20	60	125	180	200
Bulgaria	500	884	1,500	2,200	2,500
Czechoslovakia	13,000	34,600	50,000	58,000	60,000
East Germany	13,000	18,300	26,500	34,500	40,000
Hungary	975	2,500	4,355	6,200	7,000
Poland	2,150	8,120	10,500	15,000	20,000
Rumania	383	1,500	2,200	2,800	3,300
Total	30,028	65,964	95,180	118,880	133,000

a. Details of consumption breakdowns by transportation goods and nontransportation goods are given in Appendix B.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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B. Transportation Goods.

1. Quantities.

The motor vehicle tire industry is the largest single consumer of rubber in the European Satellites.* Prewar production statistics are generally not available, and this lack of basic knowledge of the prewar capacities for tire production complicates the derivation of actual estimates for postwar years, during which production statistics have been carefully obscured in Communist percentage yields.

Available evidence indicates that since the end of World War II, when the Communists assumed control in the European Satellites, extensive plans have been made for a rapid increase in the production of motor vehicle tires, particularly heavy truck tires, which formerly were imported from West Germany and other Western countries. This type of production has been a major problem in the European Satellites, and although they are still dependent on the USSR for imports to meet the majority of their truck-tire needs, some progress has been made in achieving production of the required sizes.

Available production data indicate that in the European Satellites there is in effect a system of country specialization in the manufacture of various types and sizes of tire casings. These data lead to the following conclusions: (a) East Germany produces mainly automobile tires and small-sized truck tires; (b) Bulgaria is mainly self-sufficient, except in large vehicle tires, but depends on the USSR and on the other European Satellites for rubber and rubber chemicals, including carbon blacks and sulfur; and (c) Czechoslovakia is a center for tire cord and the larger sizes of tires and is probably the most nearly self-sufficient country in the Soviet Bloc in the manufacture of all types of rubber goods. Czechoslovakia, however, depends on the USSR and East Germany for synthetic rubber, carbon blacks, and some rubber chemicals.

The production of motor vehicle tires in the European Satellites for selected years, 1946-53, estimated on the basis of plant data, country statistics, and yearly percentage rates of increase, is given in Table 5.**

* Detailed analysis of the production of tire casings in the European Satellites is given in Appendix B.
** Table 5 follows on p. 9.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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Table 5

Estimated Production of Motor Vehicle Tires
in the European Satellites
Selected Years, 1946-53

Number of Units

	1946	1948	1950	1952	1953
Albania	0	0	0	0	0
Bulgaria	5,000	12,500	42,731	80,000	90,000
Czechoslovakia	310,000	953,000	1,390,000	1,660,000	1,750,000
East Germany	23,500	104,000	394,000	772,300	880,000
Hungary	30,000	55,000	105,500	160,000	175,000
Poland	26,000	141,000	215,000	310,000	360,000
Rumania	20,000	68,000	105,000	125,000	135,000
Total	414,500	1,333,500	2,252,231	3,107,300	3,390,000

Estimates of the consumption of rubber for transportation goods in the European Satellites have been derived from data on the production of tires, plan figures, reported statistics, and related information.*

In the European Satellites, about 43 percent of the total rubber consumed in 1953 was used in the manufacture of transportation goods. The corresponding figure in the USSR in 1953 was about 66 percent.

Transportation goods have been divided into two categories: (a) tires and tubes for motor vehicles and (b) bicycle tires and tire repair material. Estimates of consumption of rubber for the second category of transportation goods are based on production figures derived from official statistics, plans, press reports, plant studies, and other reports. Estimated consumption, in terms of these two categories of transportation goods, is shown in Appendix B. The estimated consumption of rubber in the European Satellites for selected years, 1946-53, for all transportation uses is given in Table 6.**

* Analysis of the consumption of rubber for transportation goods is given in Appendix B. Details of the methodology used in deriving estimates are given in Appendix F.

** Table 6 follows on p. 10.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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Table 6

Estimated Consumption of Rubber in the European Satellites for All Transportation Goods Selected Years, 1946-53

Metric Tons

	1946	1948	1950	1952	1953
Albania	0	10	25	30	30
Bulgaria	55	136	464	1,087	1,200
Czechoslovakia	5,069	14,769	22,520	27,095	28,620
East Germany	441	1,504	5,850	12,100	14,078
Hungary	545	1,000	1,885	3,000	3,450
Poland	580	2,766	4,125	6,100	7,950
Rumania	153	720	1,323	1,550	1,700
Total	6,843	20,905	36,192	50,962	57,028

2. Types.

The types of rubber used in the European Satellites for transportation goods, as well as for other goods, varies with available supply and individual industry practices. In prewar years a large percentage of natural rubber was used in transportation products, but recently there has been greater use of synthetic rubber and of small quantities of reclaimed rubber. In Czechoslovakia the 1949 plan indicated that in the production of transportation goods, reclaimed rubber amounted to 8 percent of the total rubber used. 6/ Ratios of synthetic and natural rubber are not shown in the plan, but plant data reveal that it was not unusual for synthetic rubber to account for as much as 90 percent of the total.* 7/

C. Nontransportation Goods.

1. Quantities.**

Estimates of the amount of rubber used in the European Satellites for nontransportation goods are necessarily based on

* Plant data are given in Appendix E.
** Detailed analysis of the consumption of rubber for nontransportation goods is given in Appendix B.

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inconclusive evidence. Where such used could be determined, the quantity used for nontransportation goods averaged from 55 to 60 percent.

Estimated consumption of rubber in the European Satellites for nontransportation goods is given in Table 7. Estimates are derived mainly from available country statistics for early postwar years and from best judgment of country progress in more recent years.*

Table 7

Estimated Consumption of Rubber in the European Satellites for Nontransportation Goods
Selected Years, 1946-53

Metric Tons

	1946	1948	1950	1952	1953
Albania	20	50	100	150	170
Bulgaria	445	748	1,036	1,113	1,300
Czechoslovakia	7,931	19,831	27,480	30,905	31,380
East Germany	12,559	16,796	20,650	22,400	25,922
Hungary	430	1,500	2,470	3,200	3,550
Poland	1,570	5,354	6,375	8,900	12,050
Rumania	230	780	877	1,250	1,600
Total	23,185	45,059	58,988	67,918	75,972

2. Types.**

All available information shows a decided trend toward using increasing quantities of synthetic and reclaimed rubber in the European Satellites, particularly for nontransportation goods. Exceptions to this generalization would be in goods such as drug sundries, which use very little rubber quantitatively.

* Details of the methodology used in arriving at these estimates are given in Appendix F.
** Detailed analysis of the types of rubber used in certain kinds of nontransportation goods is given in Appendix B.

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III. Stockpiles.

Existing evidence supports the assumption that the availability and consumption of rubber in the European Satellites since the war have been approximately equal. Certain reserve stocks of rubber and rubber products have been reported, particularly in Czechoslovakia and East Germany, but these stocks are believed to be more or less normal stocks for reserve against financial or economic necessities. Available information is inadequate to support any reliable quantitative estimate of such stocks.*

IV. Intentions, Capabilities, and Vulnerabilities.

A. Intentions.

Reliable evidence indicates that in the European Satellites there is an increasing emphasis on the production of synthetic rubber, particularly in East Germany, Czechoslovakia, and Poland. The fact, coupled with the knowledge that considerable experimental work in the production of natural rubber is going forward, is a clear indication that the European Satellites are striving to contribute to the self-sufficiency of the Soviet Bloc.**

There is some evidence of the existence of depots for stocks of fabricated rubber goods, including tires, in the European Satellites.*** Whether or not these stores of rubber products are merely indicative of normal defensive strategy cannot be determined at the present time. Some evidence indicates that recently the drain of rubber products from the European Satellites to the USSR has diminished and that more attention is being given to internal consumer needs. Any major change in the current situation, involving unusually heavy shipments of fabricated rubber goods out of the European Satellites, might well predict the coming, or planning, of aggressive action by the USSR.

* Some individual reports of such stocks and of stockpiling plans are discussed in Appendix D.

** Details of plans for increased production of synthetic rubber and of experimental work in the production of natural rubber are given in Appendix A.

*** These depots are described in Appendix D.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

B. Capabilities.

Production data and estimates show that the European Satellites have made steady and substantial progress in the production of both synthetic and reclaimed rubber since 1946. Parallel progress has been made in the rubber products industries. Although actual production has, in some cases, lagged considerably behind plan figures, there is no evidence to indicate that present plans are entirely unrealistic. (See Appendixes A and B.)

C. Vulnerabilities.

The increasing self-sufficiency of the Soviet Bloc, insofar as production of rubber and rubber products is concerned, would indicate that the industry in the European Satellites is not vulnerable to economic proscription. The scarcity of reliable data on imports of natural rubber, however, qualifies such an assumption. It is possible that economic pressure which would eliminate or reduce imports of natural rubber by the European Satellites might seriously affect their rubber industries.

The major point of vulnerability to either sabotage or military attack is probably the Schkopau Plant in East Germany, which produces a major part of all synthetic rubber produced in the European Satellites. Destruction or crippling of this plant would place a great burden upon the rubber production facilities of the USSR and might materially reduce the effectiveness of Soviet Bloc military transportation.

The generally wide dispersal of plants engaged in the rubber products industries (see Appendix E) and the lack of any major concentration of stockpiles of rubber and fabricated goods (see Appendix D) indicate no great vulnerability of fabricating plants or stockpiles.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX A

PRODUCTION OF RUBBER IN THE EUROPEAN SATELLITES

Firm estimates of the production of rubber in the European Satellites through 1953 have been given in the text of this report. In addition to the evaluated information on which these estimates are based, there is a considerable body of unevaluated information which is of possible significance. The study presented in this appendix includes all information, both evaluated and unevaluated, with appropriate caveats when and where necessary.

I. Albania.

There is no evidence of production of any type of rubber in Albania, and the country is dependent mainly on imports for its small needs.

II. Bulgaria.

A. Synthetic Rubber.

A small, experimental synthetic rubber plant near Sofia was reported producing during wartime, and it was planned to establish a larger plant capable of producing 300 to 500 tons annually. 8/ Postwar Five Year Plans (1949-53) provided for a synthetic rubber plant, with production to be based on acetylene from carbide, and various references to planned production have been noted. 9/ There is, however, no conclusive evidence that Bulgaria has been able to produce synthetic rubber on anything but an experimental basis, less than 1,000 tons per year. This conclusion is substantiated by a source who stated that there had been no production of synthetic rubber in the country since the war. 10/

B. Natural Rubber.

Experimental cultivation of rubber-bearing plants in Bulgaria has been reported. Cultivation of 100 hectares (247 acres) of asclepias, a plant which is grown principally for its fibers but which also has an appreciable rubber content, was reported in the Plovdiv area in 1942. 11/ Results of these experiments are not known. A recent report indicates that experimental kok-saghyz planting is now under

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way. The method of extraction used by the Bulgarians is washing the roots with gasoline, which produces a material containing resin and other substances but does not produce rubber for commercial purposes. 12/ The Central Forest Research Institute is reported to be working on experiments for the production of gutta-percha from the Bradavichen Chesko-Dryan. 13/

C. Reclaimed Rubber.

Information on reclaimed rubber production is scant. The existence of equipment for rubber reclamation, including replastification, at the Bakish tire plant was reported in 1950. This report also stated that a central rubber-reclaiming factory was to be built in 1950 at an unknown location. Use of 90 to 120 tons of reclaimed rubber by the Bakish tire plant was reported, and it is assumed that this reclaimed rubber was produced by that plant. 14/ Some production of reclaimed rubber is also reported at Pazardzhik. 15/

III. Czechoslovakia.

A. Synthetic Rubber.

Small quantities of both neoprene and butadiene types of rubber have been reported, although there is some confusion about whether both types are made. (See Appendix E.)

The production of neoprene reportedly started during World War II, with a production of 3,000 tons in 1942. 16/ Most of the plant was destroyed, and it has since been reported to be producing on only a semi-industrial basis because of lack of technical equipment. 17/ Research plans for 1951 included work on chloroprene, to be done at Gottwaldov. 18/

A synthetic rubber plant in Bratislava was planned by the Matador Company and was to be furnished with US equipment, but trade controls reportedly blocked this supply. Equipment was then to be completed by Brnenske Strojirenske Zavody Klementa Gottwaldov in Brno. 19/ Another report stated that the Czechoslovak government had ordered the directorate of Moravian distilleries and vinegar factories in Brno to plan for the production of synthetic rubber from alcohol. For this purpose a large factory known as Betanolka was under construction in Rajec, near Blansko and was to be placed under military control. 20/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Plans during 1951 and 1952 included research work on problems in the production of synthetic rubber. Considerable research on chloroprene was expected to continue into 1953. Utilization of rubber industry waste, excepting reclaimed rubber, was planned to include the production of isoprene. Another project to utilize rubber industry waste said to amount to about 3 million kilograms was planned for completion by 1953: as an auxiliary material for the tanning industry, production of various acrylates was to be introduced, and facilities for the production of eventual copolymers from metacrylates were also planned for 1952 completion. 21/

An article in a Soviet periodical in late 1952 stated that one of the principal tasks of the Czechoslovak chemical industry was the creation of a basic synthetic organic industry, first of all the development of the production of synthetic rubber and plastics. "In the coming years, the production of synthetic rubber, bakelite powder, and plastics will be started in Czechoslovakia." 22/ The plan indicates that, as of the end of 1952, actual production of synthetic rubber was negligible.

B. Natural Rubber.

Reports on experimental cultivation of herbs as a source of natural rubber have been noted. In 1949 the Soviet Ministry of Agriculture ordered cultivation of kok-saghyz in Czechoslovakia. In February 1949 the Soviet Specialist Engineer Robert Ozonlinsch supervised the planting in Czechoslovakia of 156 hectares of kok-saghyz, of which 56 hectares were to be used for seed and 100 for the rubber-bearing roots. About 40 hectares of crop died, but about 650 tons of roots were harvested and shipped to Polish plants, which produced about 56 tons of crude rubber. In 1950, cultivation was extended to 360 hectares, of which 80 were for seed, 110 for a 2-year crop, and 170 for a 1-year crop. Allocation for the 2-year crop was expected to yield 160 tons of rubber and the 1-year crop about 90 tons. 23/ Another report stated that although crops in eastern Moravia were poor in 1951, those in Slovakia appeared good, and an estimated 125 to 150 tons of rubber were expected. 24/ Experimental planting was reported in Budejovice (Budweis) in southern Bohemia and at the Agricultural School at Chrudim, eastern Bohemia, during late 1951. 25/

Other recent reports have indicated experimental cultivation of spindle trees, comparatively scarce in Czechoslovakia, and plantations of these trees started in several places. 26/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

C. Reclaimed Rubber.

A report on the 1949 plan in Czechoslovakia indicated a production of about 6,000 tons of reclaimed rubber for that year. 27/ Campaigns for the collection of scrap rubber were reported early in 1949. 28/ Imports of additional quantities of reclaimed rubber have formerly been obtained from Western countries.

Plans indicate greater emphasis on domestic production, and research plans for the leather and rubber industries during 1951-52 included a plan "to perfect high-pressure regeneration and enable large production of regenerators." 29/

IV. East Germany.

A. Synthetic Rubber.

The synthetic rubber plant at Schkopau, the largest in wartime Germany, is the only producer of synthetic rubber in East Germany. Although waves of dismantling in 1948 temporarily decreased production, definite progress had been made by 1953. It is planned to produce 70,000 to 75,000 tons by 1955, a quantity approaching the wartime peak of 73,000 tons in 1943. 30/

Buna S is the major type of rubber produced, but variations of butadiene and butadiene-styrene types are made. Research work on rubber suitable for use in low-temperature areas, 31/ on cold rubber, and possibly on oil-extended rubber is being done. The most recent development is the production of Chlorobuna, a rubber used as coating for mines and submarines. 32/

Although production of synthetic rubber is now near the wartime peak, because of large allocations of about 50 percent of total production to the USSR and other Satellites, quantities available for domestic consumption are not sufficient to meet requirements of all types of rubber goods needed by the internal economy.

B. Natural Rubber.

There is no evidence indicating work in progress in East Germany on rubber-bearing plants such as kok-saghyz. Unique in this respect, East Germany is the only Soviet Bloc country of any industrial importance which is not attempting to get supplementary supplies of natural rubber from this source.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

C. Reclaimed Rubber.

There is little information on East German plant facilities for reclaiming rubber, and output appears to be relatively small. Two plants supply the major portion of such rubber produced, although as many as 6 reportedly have facilities for this production. 33/ It is probable that the units in other reported plants are small and serve only to supply the needs of the individual plants. As far as available information indicates, the two major installations are at Zipsendorf and Meuselwitz. 34/ Demand for reclaimed rubber is much greater than supply, and the difficulties preventing increased production are not yet known.

V. Hungary.

A. Synthetic Rubber.

The Germans constructed a plant for the production of buna N and buna S synthetic rubber at Rakoskeresztur, but it never went into operation. Recent reports indicate that since the war the plant has been converted to the production of dyestuffs. 35/

Various other areas have been reported as producing synthetic rubber. 36/ The most recent information of this type concerns a joint Soviet-Hungarian plant comprised of 13 buildings under construction at Szeged. Output in 1956, it is reported, is designed to reach 26,000 tons. 37/ Another report on planned production of synthetic rubber states that the basic raw material is to be alcohol from natural gas. 38/ At the beginning of 1952, however, it was reported that experimental work on synthetic rubber was being done at a small plant located in Budatetenny, but that plans were under way to produce synthetic rubber from alcohol. 39/

B. Natural Rubber.

The Soviet-Hungarian trade agreement of 1 August 1948 to 31 December 1949 provided for the USSR to supply Hungary with 50 kilograms of kok-saghyz seed. 40/ Various reports on areas of cultivation of rubber-bearing plants have been reported, and experimental stations reportedly have been set up at Szeged, Debrecen, and Mezahegyes. 41/

It was stated that, by mid-1952, 420 acres were devoted to the cultivation of kok-saghyz and that a large rubber fabrication plant was

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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planned near the plantations. 42/ Press reports indicate an ambitious program for the growing of rubber on 5,000 acres by the end of 1954. 43/

Yields of rubber from the roots of these rubber-bearing plants have been reported at various rates. One report stated that crops on 1 yoke (0.575 hectares) yielded from 25 to 30 kilograms of rubber. 44/ The Chief of the Hungarian Botanical Research Institute, Ferenc Schuller, in a lecture on the Soviet cultivation of kok-saghyz, expressed the hope that realization of Soviet agrotechnical methods would permit an average kok-saghyz crop of 120 to 160 kilograms per cadastral yoke. If this goal can be achieved, it was claimed, cultivation of kok-saghyz on an area of 45,000 to 50,000 yokes will be sufficient to meet Hungary's total demand for raw rubber. A range of 60 to 200 kilograms of rubber per hectare was also reported, but it was said that despite successes in experimental work, considerable investment and organization would be necessary to produce tangible results. 45/ These reports indicate that in Hungary very little rubber has as yet been obtained from this source.

C. Reclaimed Rubber.

Very little information has been obtained about reclaimed rubber capacity or production in Hungary. From plant studies it appears that reclaiming facilities are located in the Ruggyant Arugyar "Emerge" rubber-fabricating plant at Budapest, and for several months Soviet experts assisted this plant in the utilization of waste and reclaimed rubber. 46/ Scrap rubber drives have been noted, and scrap has been required before new tires are issued. 47/ A press article stated that important commodities are manufactured out of scrap and synthetic material by the Synthetic Material and Rubber Processing Cooperative at its Szabolcs plant. 48/ The location of this facility has not been determined.

VI. Poland.

A. Synthetic Rubber.

Prior to the war the Germans constructed a plant at Oswiecim (Auschwitz) for the production of synthetic gasoline and rubber. Designed for a capacity of 36,000 tons of synthetic rubber, this plant was not in operation at the end of the war and was completely dismantled by the Russians in 1945. 49/ Plans for the re-establishment at this location of a large synthetic complex, called the Dwory State

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Synthetic Plant, have been made, and the Six Year Plan (1950-55) provided for a goal of 13,000 tons of synthetic rubber in 1955, most of which presumably was to come from this plant. 50/ As yet there is no evidence of production of synthetic rubber at this plant, although the plan for 1953 reportedly included 9,000 tons of synthetic rubber, part of which included production by new factories to be constructed during 1952 and 1953. 51/

There have been various other reports on plans to establish production of synthetic rubber in Poland. UNRRA reported that during 1947-50 a synthetic rubber plant of about 8,000-ton annual capacity was to be erected and that another of 1,000 tons was planned. 52/ In the 1948 investment plan, some 39 million zloty were allocated for a synthetic rubber plant at Debica, which appears to be an experimental plant producing butadiene-type rubber. 53/ This plant was reported to have an initial capacity of 5,000 tons, but some wartime damage was sustained.

A plant for the production of thiokol, a specialized rubber used mainly for tank sealing, protective clothing, gaskets, and hose linings, was built before the war at Zarow (Saaru) in Silesia (formerly part of Germany), and the company reported a production of 1,461 tons during the period 30 June 1940 to 1 July 1942. 54/ One report stated that the plant was producing at the rate of 12,000 tons per year, but this quantity appears unreasonable in view of Polish official plans, difficulties in raw materials, and limited use of this specialized type of rubber. 55/

An unconfirmed report states that a plant at Radosc went into production at the end of 1951. 56/

B. Natural Rubber.

The cultivation of kok-saghyz in Poland has been noted, but by mid-1951 no significant progress had been made. It was stated that this program would entail construction of processing facilities. 57/ This work with kok-saghyz was planned as a goal of the Six Year Plan. 58/

C. Reclaimed Rubber.

During Poland's Three Year Plan (1947-49), a reclaimed rubber plant was planned with a capacity of 1,500 tons per year and was expected to be in operation by early 1948. 59/ This plant may be the

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

the same one reported at Bolechowo as the first such reclaiming plant built in Poland. 60/ This claim may refer to the type of reclamation, as two rubber-fabricating plants, at Krakow and Poznan, are believed to have facilities for reclaiming rubber. 61/ There has been an announcement of an economical method of regeneration of rubber, reportedly worked out by Professor Turski, which allows utilization of larger amounts of waste rubber than had previously been possible. 62/ This reference apparently concerns use of special equipment to sort rubber from fabric and other foreign matter, thus making possible the reclamation of a greater variety of rubber goods. It is probable that up to this time, reclaiming utilized only articles such as tubes and hygienic articles, which contain no fabric or metal. Production facilities at fabricating plants, such as Poznan, also may be used for that plant's production only.

Poland's Six Year Plan (1950-55) provided for the share of reprocessed rubber (reclaimed) to grow to 25 percent of total raw material used. Toward this goal, the erection of a factory with a capacity of 6,000 tons annually was planned. 63/ A report on the chemical industry during 1951 stated that in 1950-51 the production of processed rubber was more than double the amount stipulated by the Six Year Plan. 64/ A report of progress at the end of 3 years of the Six Year Plan indicated that production of reclaimed rubber had been carried out 234.7 percent and stated that production of reclaimed rubber in 1949 had been nonexistent. 65/

VII. Rumania.

A. Synthetic Rubber.

Although numerous press reports state that synthetic rubber is being produced in Rumania, information available indicates small production, if any.

It is reported that there is a synthetic rubber plant attached to the Columbia Oil Refinery at Ploesti. Production of about 2,000 kilograms per month (24 tons per year) from the polymerization of butane-propylene gases was planned. 66/ Reportedly, production of synthetic rubber by September 1949 at a petroleum-cracking plant in Moreni was planned. 67/ Production has been reported at Brasov, at Margina near Recita, and at Medias. 68/ Press reports indicate that methane gas would be used as a source of raw material for synthetic rubber production, but as yet there is no evidence of actual production. 69/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

B. Natural Rubber.

Under the terms of the Soviet-Rumanian trade agreement of 20 February 1947, the USSR was to supply Rumania with 20 kilograms of rubber plant seed. 70/ It is reported that rubber bushes discovered in the Ukraine by the Germans during 1941 were transported that same year to Rumania and Hungary and planted in the vicinities of Fogaras, Buzau Trei Scaun, and Crisana. Rubber-processing plants for this type of rubber reportedly were located at Arad and Stalin (Brasov) in Rumania. Rumania reportedly obtained 1,700 to 1,800 tons of this type of rubber during 1949. 71/ This appears to be a sizable quantity, and until further study of agricultural plantings is made, such a yield cannot be confirmed. Press reports state that Soviet kok-saghyz has been raised successfully in Rumania and that the extraction of rubber from this plant has benefited materially the Rumanian national economy. 72/

C. Reclaimed Rubber.

It is reported that a rubber-reconditioning plant is to be completed in 1953 and that its entire output is then to be sent to Jilava. 73/

Investments for the rubber industry during the Five Year Plan (1951-55) included substantial amounts for a new factory to recondition old rubber to be located at Giurgiu or on the Bucharest-Giurgiu railway line. These investments were to be made during the first 3 years of the plan in order to insure full production by the end of the fifth year. 74/

Estimated production of synthetic, natural, and reclaimed rubber in the European Satellites, 1946-53, is given in Table 8.*

* Table 8 follows on p. 24.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 8

Estimated Production of Synthetic, Natural, and Reclaimed Rubber
in the European Satellites
1946-53

Metric Tons

Country	Type of Rubber	1946	1947	1948	1949	1950	1951	1952	1953
Bulgaria	Synthetic	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Reclaimed	N.A.	N.A.	N.A.	N.A.	90	100	150	200
Total Known Rubber		N.A.	N.A.	N.A.	N.A.	90	100	150	200
Czechoslovakia	Synthetic	N.A.	40	300	600	1,000	1,200	1,500	1,700
	Natural	N.A.	N.A.	N.A.	56	110	125	135	160
	Reclaimed	4,500	5,000	5,500	6,000	6,500	7,000	8,000	9,000
Total Known Rubber		4,500	5,040	5,800	6,656	7,610	8,325	9,635	10,860
East Germany	Synthetic	23,997	38,460	30,700	26,500	39,008	48,853	56,300	62,000
	Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	50	100
	Reclaimed	1,500	2,000	2,500	3,000	3,300	3,770	4,200	5,000
Total Known Rubber		25,497	40,460	33,200	29,500	42,308	52,623	60,550	67,100
Hungary	Synthetic	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Reclaimed	500	900	1,900	2,200	N.A.	3,000	N.A.	5,200
Total Known Rubber		500	900	1,900	2,200	N.A.	3,000	N.A.	5,200

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 8

Estimated Production of Synthetic, Natural, and Reclaimed Rubber
in the European Satellites
1946-53
(Continued)

Metric Tons

Country	Type of Rubber	1946	1947	1948	1949	1950	1951	1952	1953
Poland	Synthetic	N.A.	N.A.	500	1,000	1,400	2,000	2,700	4,000
	Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Reclaimed	N.A.	N.A.	N.A.	N.A.	2,800	N.A.	4,500	N.A.
Total Known Rubber		N.A.	N.A.	500	1,000	4,200	2,000	7,200	4,000
Rumania	Synthetic	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Reclaimed	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total Known Rubber		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total Synthetic, All Countries		23,997	38,500	31,500	28,100	41,408	52,053	60,500	67,700
Total Natural, All Countries		N.A.	N.A.	N.A.	56	110	125	185	260
Total Reclaimed, All Countries		6,500	7,900	9,900	11,200	12,690	3,870	16,850	19,400
Grand Total, All Countries		30,497	46,400	41,400	39,356	54,208	56,048	77,535	87,360

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX B

CONSUMPTION OF RUBBER IN THE EUROPEAN SATELLITES

I. Size and Importance of Rubber-Consuming Industries.

A. Albania.

There is practically no rubber industry in Albania, and the country must depend on imports for the extremely small annual requirements of rubber products, about 300 tons in prewar years. The USSR and the other European Satellites have supplied Albania with rubber and rubber products during postwar years.

Small shops in Albania turn out footwear and bicycle tires. 75/ Facilities for the retreading of tires are now in operation, according to recent reports. 76/

B. Bulgaria.

Bulgaria has a small rubber industry, which before the war consumed about 1,000 tons of rubber per year. Chief production was rubber footwear, the output of which covered about 90 percent of requirements. Capacity for tire manufacture was very small. 77/

The rubber industry in Bulgaria, concentrated chiefly in Sofia, has continued to expand since the war. The Georgi Dimitrov State Rubber Factory (formerly the Bakish Rubber Factory) is the most important rubber plant in the country. Production of tires for motor vehicles grew from 1,600 in 1936 to an estimated 12,500 in 1948. The 1953 plan of 100,000 units indicates the strong emphasis placed on tire production since the end of World War II. Footwear is still an important consumer of rubber in Bulgaria. The Five Year Plan (1949-53) provided that by 1953 footwear production would increase 687 percent over that of 1939 and 55 percent over that of 1948. It also provided for the development of other products which would promote self-sufficiency in major types of industrial rubber goods. 78/

The difficulties encountered in attaining such an ambitious plan have been indicated. Much press criticism was devoted to criticism of a plan by the director of the state-owned rubber industry to provide greater centralization of the rubber industry. 79/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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C. Czechoslovakia

Czechoslovakia has a highly developed, technologically advanced rubber-fabricating industry, which is capable not only of meeting domestic requirements but also of exporting considerable quantities of a large variety of rubber products.

The expansion of existing facilities of the rubber industry and the addition of new plants have enabled the industry to progress substantially since the end of World War II. Production of tires has grown from about 500,000 units in 1938 to nearly 2 million units in 1953. Czechoslovakia supplies quantities of these tires to the USSR and to the other Satellites. Until 1948, most of the motor vehicle tires exported to the USSR were said to be of size 7.50 x 20 (for small delivery vehicles). 80/ Larger size tires, formerly imported, are now being produced. 81/

There is also a large and varied production of other types of rubber goods, such as hose, belting, footwear, and industrial rubber goods. In the production of these fabricated rubber articles, Czechoslovakia occupies the most prominent spot in the Eastern European complex, and the country probably receives top priority among the Satellites in the procurement of the raw materials, such as carbon blacks and rubber chemicals, needed by the rubber industries in the Satellites.

D. East Germany.

In prewar years, almost 90 percent of the rubber industry was in what is now West Germany. The rubber industry, weakened through dismantling after the war, had a 1948 production capacity of about 400 tons of rubber or 800 tons of finished vulcanized products per month.

The tire industry presented an especially difficult problem, since most of this capacity formerly was in West Germany. Postwar dismantling of the main tire plant, the VEB (Volkseigene Betrieb -- People-Owned Enterprise) Deka Reifenwerke plant at Ketschendorf, further reduced the tire-manufacturing capacity of East Germany. After the closing of zonal borders on deliveries from the Western Zones of Germany in 1948, the highest priority was given to the creation of a tire industry for East Germany, and the 4 small plants having tire-manufacturing facilities were expanded. At that time, almost all tires

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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produced were of size 7.00 to 7.50 x 20 and smaller. 82/ Even during 1951 the production of truck tires in sizes 10 x 20 and larger was insufficient, and many vehicles reportedly were nonoperative because of the lack of replacements. 83/ Production of tires grew from about 100,000 in 1948 to almost 1 million in 1953. By 1955, production of motor vehicle tires is expected to reach 1.2 million. 84/ Reportedly 10 percent of all tires produced, particularly truck tires and nonskid tires, are requisitioned for state reserves and government contracts. It was reported, however, that an overproduction of tires in 1952, resulting from a lag in motor vehicle production, had made it necessary to impose an excise tax of 300 to 400 percent on all passenger car tires. 85/

Production of other rubber goods, gradually expanded to meet domestic requirements after trade problems restricted imports from the West, has also progressed substantially. Some items are still in short supply, and major attention is being devoted to articles having military significance. Special orders in 1951-53, for example, included rubber dinghies, track pads, and webbed gloves, in addition to special types of tires used by military vehicles. 86/

Difficulties in increasing production of rubber goods have been increased by the lack of necessary components for tire and rubber product fabrication, particularly bead wire, carbon blacks, and rubber accelerators. 87/ Many of these raw materials have been put in production by various Satellite countries since the war, and production of these items is being expanded.

E. Hungary.

The rubber industry in Hungary has not occupied a very important place in the Satellite complex. About 3,000 tons of natural rubber were imported in prewar years, and additional demand for rubber products was met by imports of finished goods.

Considerable progress in the rubber industry was planned during the current Five Year Plan (1950-54). 88/ Footwear is expected to increase by 81 percent during this period. The over-all rubber industry is planned to increase by 154 percent over the 1949 production, with the aid of new industrial establishments, and industrial rubber goods are expected to show an increase of 3,600 tons over the 1949 production.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

There is only one plant manufacturing motor vehicle tires in Hungary. Tire production reportedly accounts for more than half of total plant production in this one plant. 89/ It is anticipated that 1954 tire production will show an increase of 107,000 units over 1949 production, estimated at 72,000 units, a 1954 goal of about 180,000 tires.

F. Poland.

Before World War II, there were 20 rather large rubber factories in Poland, employing over 15,000 workers. Total annual production of rubber goods was almost 14,000 tons, of which nearly 60 percent was tires and footwear. 90/

Production capacities of these plants in 1945 were very low, averaging about 30 percent of prewar capacity. UNRRA and the USSR supplied rubber until normal trade relations were resumed. The Three Year Plan (1947-49) called for the following percentages in relation to prewar production 91/:

Year	Percent of Prewar Production
1947	54
1948	108
1949	133

In 1947, production reached 130 percent of plan, and by November 1948 the production was 97 percent of the year plan. 92/ Production in 1946 totaled only 4,300 tons, or only 29 percent of the prewar level. Of this production, one-third was tires and tubes for motor vehicles and bicycles. Plans called for a production of 10,000 tons in 1947 and 18,000 tons in 1948. Included in this 1948 plan were 5,200 tons of tires and tubes, 4,900 tons of shoes, the remainder being various other types of rubber goods. 93/

Great expansion of the rubber fabricating industry was contemplated during the Six Year Plan (1950-55), with the production of tires to increase fourfold and footwear to total 10 million pairs by 1955. 94/ Production of other rubber goods was planned to reach 13,000 tons in that year.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

There are at least two factories manufacturing motor vehicle tires in Poland. Production of these tires had increased from 78,000 in 1947 to an estimated 360,000 in 1953. A greater variety of tires, made in only 8 sizes in early postwar years compared to the prewar 80, has undoubtedly increased. 95/ Consumption of rubber for tires is planned to constitute 56 percent of total consumption. 96/ The plan specified a goal of 80,000 trucks, autos, tractors, and motorcycles by 1955, which would require from 320,000 to 400,000 tires for new equipment alone.

G. Rumania.

The rubber industry in Rumania is small and finished rubber goods as well as some rubber are imported, mainly from the USSR, to meet requirements. About 3,000 tons of finished goods are produced annually.

There are believed to be two plants in Rumania producing motor vehicle tires, and the USSR supplies some additional tires. Tire production is estimated to have increased from about 68,000 tires in 1948 to over 135,000 in 1953. The current Five Year Plan (1951-55) provided for the production of 4,000 tons of tires and 2.7 million pairs of rubber footwear by 1955. 97/ The goal for footwear was recently raised by 4 million by 1955, but there is no information on any further changes for tires or other goods. 98/

Production of carbon blacks, an important raw material used in the fabrication of rubber goods, has increased greatly in postwar years, making Rumania a decided asset to the Soviet Bloc economy as a supplier of one of the most important raw materials for the rubber industry. Although other Satellite countries have recently developed increased production of this product, Rumania remains the greatest producer in the Satellites.

In a protocol attached to the Treaty of Friendship, Collaboration, and Mutual Assistance between the USSR and Rumania, signed in Moscow on 4 February 1948, it was specified that if Rumania were threatened by invasion or air attack from the West, all industries considered of importance to the war effort would be transferred to the USSR in accordance with a plan to be drawn up by a mixed commission. 99/ This agreement serves to illustrate the closely woven economies of the Soviet Bloc countries, strictly controlled by the USSR.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

II. Consumption by Goods Categories.

A. Transportation Goods.

Estimates of production of vehicle tires, consumption of rubber for other transportation goods, and total consumption of rubber for all transportation goods in the European Satellites are given in Tables 9,* 10,** 11,*** and 12.****

B. Nontransportation Goods.

In the European Satellites, consumption of rubber for nontransportation goods varies with the size and stage of development of the rubber industry in each country. Ranges run from over 80 percent of total consumption of rubber in Albania, where no motor vehicle tires are produced, to 50 percent in Czechoslovakia.

East Germany, Czechoslovakia, and Poland have the most technologically advanced rubber industries in Eastern Europe. A study of patterns in East Germany indicates that the consumption of rubber for nontransportation goods has fallen, primarily because of a very low capability for making motor vehicle tires in early postwar years, from over 95 percent of the total in 1946 to about 60 percent in 1953. Czechoslovakia, which had a highly advanced rubber industry before and during the war, has remained fairly constant in ratios of 55 to 60 percent in postwar years. Poland's use of rubber in nontransportation goods has changed from two-thirds in 1946 to 50 to 55 percent in 1952. Estimated consumption of rubber for nontransportation goods in the European Satellites is given in Table 13.*****

C. Both Categories.

Total estimated consumption of rubber for all types of rubber and rubber goods in the European Satellites, 1946-53, is given in Table 14.******

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* Table 9 follows on p. 33.
** Table 10 follows on p. 36.
*** Table 11 follows on p. 38.
**** Table 12 follows on p. 40.
***** Table 13 follows on p. 41.
****** Table 14 follows on p. 42.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 9

Estimated Production of Motor Vehicle Tires in the European Satellites
1946-53

Units

Location	Plant	1946	1947	1948	1949	1950	1951	1952	1953
Bulgaria									
Sofia	Georgi Dimitrov	5,000 a/*	8,000 a/	12,500 b/	26,875 c/	42,731 d/	55,000 e/	80,000 f/	90,000 g/
Czechoslovakia									
Bratislava/Petrzalka	Matador	10,000	30,000	20,000					
Gottwaldov	Svit	210,000	416,000	603,000	720,000	800,000	850,000	870,000	900,000
Nachod	Rubena	50,000	150,000	180,000	210,000	300,000	340,000	360,000	390,000
Prague	Mitas	40,000	116,000	150,000	220,000	280,000	360,000	400,000	410,000
Puchov	Matador					10,000	20,000	30,000	50,000
Total		310,000 h/	712,214 i/	953,000 j/	1,150,000 k/	1,390;000 l/	1,570,000 l/	1,660,000 l/	1,750,000 l/
East Germany									
Berlin/Schmoeckwitz	Mueller	1,500	3,000	10,200	25,000	64,063	91,000	118,500	120,000
Heidenau	VEB-Poetsch und Franz	0	0	4,000	15,000	49;000	55,000	50,000	30,000
Ketschendorf	VEB-Deka	22,000	32,000	72,000	147,000	200,000	345,000	400,000	500,000
Klein Wittenberg	VEB-Elbe							800	5,000
Riesa	VEB-Riesa		4,000	17,755	30,000	81,000	120,000	203,000	225,000
Total		23,500 g/	39,000 m/	104,000 n/	217,000 o/	394,000 p/	611,011 q/	772,300 r/	880,000 s/
Hungary									
Budapest	Magyar	30,000 q/	48,000 t/	55,000 u/	72,000 v/	105,500 w/	120,000 x/	160,000 y/	175,000 z/

* Footnotes for Table 9 follow on p. 34.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 9

Estimated Production of Motor Vehicle Tires in the European Satellites
1946-53
(Continued)

Units

Location	Plant	1946	1947	1948	1949	1950	1951	1952	1953
Poland									
Debica	Stomil				172,000				
Poznan	Stomil	26,000	78,000	141,000		215,000	250,000	310,000	360,000
Total		26,000 aa/	78,000 bb/	141,000 bb/	172,000 aa/	215,000 aa/	250,000 cc/	310,000 dd/	360,000 cc/
Rumania									
Baicoi	Banloc	20,000	35,000	62,000	85,000	90,000	95,000	105,000	115,000
Brasov	Cauciuc Brasov		5,000	6,000	10,000	15,000	15,000	20,000	20,000
Total		20,000 ee/	40,000 ee/	68,000 ee/	95,000 ee/	105,000 ee/	110,000 ff/	125,000 ff/	135,000 ff/
Grand Total		414,500	925,214	1,333,500	1,732,875	2,252,231	2,716,011	3,107,300	3,390,999

a. Estimated. There is no basis for an estimate during these years, and it has been estimated by a downward curve from 1948 production.
b. Production in 1953 was announced to be 8 times that of 1948 and 25 times that of 1949. Another report gave the planned figure for 1953 at 100,000 units of tires. 100/
c. Production in 1949 is reported to be 215 percent of 1948. 101/
d. Production in 1950 is reported to be 158.6 percent of 1949. 102/
e. Estimated on basis of plant data, taking into account a gradual increase over previous years.
f. Industry in 1952 produced over 25,000 more automobile tires than in 1951. 103/
g. Estimated. There are very little data, including plant information to indicate more specific production estimates.
h. Official statistics give 203,350 automobile and truck tires as production for 1946; production of motorcycle and bicycle tires was 1,109,000; production of motorcycle tires, included in figure in table, was estimated. 104/
i. Official statistics give 512,214 automobile and truck tires as production for 1947; production of bicycle tires was 2,480,000; production of motorcycle tires, included in figure in table, was estimated. 105/
j. Production is reported at 703,000 automobile and truck tires and 3,765,000 bicycle and motorcycle tires. It was stated that bicycle and motorcycle tire production was behind plan. An estimated 250,000 motorcycle tires is counted. 106/
k. Plan for 1949 was 828,000 automobile and truck tires and 290,000 motorcycle tires. On the basis of 10 months' production, reported in official statistics, production of automobile and truck tires is estimated to have increased slightly over this plan. 107/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 9

Estimated Production of Motor Vehicle Tires in the European Satellites
1946-53
(Continued)

l. Plan goals have been used as basis for estimates shown, with plant data as general guide. 108/
m. Based on actual second half of 1947 production and estimates for first half. 109/
n. Estimated on the basis of plans and reported production. 110/
o. Documentary. 111/
p. Official statistics, documentary. 112/
q. Official statistics, documentary. 113/
r. Official statistics, documentary. 114/
s. Plans and estimates based on first 3 months' production. 115/
t. Based on report which stated that official figures in mid-1947 showed 4,000 motor vehicle tires produced monthly. 116/
u. Plan basis. Reported that 1949 production was 132.2 percent compared with 1948 production. These two reports are used only as rough measure in conjunction with plant data to derive the estimate for 1948. 117/
v. Reported press article stated that of 72,000 units reportedly produced, actual production of automobile and truck tires was only 45,000, the remainder being tractor and motorcycle tires. 118/
w. Production in 1950 of automobile tires was 146.5 percent compared with 1949. 119/
x. Second quarter results of 1951 compared with same period of 1950 was 132.5 percent for automobile tires. 120/
y. Output of motor lorry tires in 1952 was 134.8 percent of 1951; plant data for September-October 1952 indicate a level of 120,000 to 160,000 tires per year. 121/
z. Estimated on the basis of plant data in late 1952.
aa. Based on scattered plant data, plus tonnage reported for tire production. 122/
bb. Reported figure. 123/
cc. Based on probable rate of increase and scattered plant production data.
dd. Based on probable rate of increase and other relating data; one report gave 11,000 tons of tires produced which, assuming the inclusion of bicycle tires, would give a rough basis for estimate. 124/
ee. Based on reported tonnage output of tires, allowing for bicycle tires, plus scattered plant data. 125/
ff. Estimated from plant data, planned goals, and gradual yearly increases in line with planned goals, allowing for normal yearly rate of increase. 126/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 10

Estimated Consumption of Rubber for Motor Vehicle Tires and Tubes in the European Satellites
1946-53

Metric Tons

Country	1946	1947	1948	1949	1950	1951	1952	1953
Albania								
Bulgaria	45 a/	72 a/	113 a/	244 a/	475 a/	625 b/	907 b/	1,020 b/
Czechoslovakia	4,219 c/	9,263 c/	12,269 c/	15,500 c/	18,920 c/	21,370 c/	22,595 c/	23,820 c/
East Germany	266 b/	438 b/	1,179 b/	2,461 b/	5,000 d/	8,317 e/	10,500 e/	11,978 e/
Hungary	345 b/	545 b/	700 d/	915 d/	1,350 d/	1,640 e/	2,100 e/	2,400 e/
Poland	290 f/	811 g/	1,502 h/	1,901 i/	2,500 j/	3,000 k/	3,900 l/	4,950 m/
Rumania	138 n/	432 o/	648 p/	1,080 q/	1,191 r/	1,260 s/	1,395 s/	1,530 s/
Total	5,303	11,561	16,411	23,101	29,436	36,172	41,397	45,698

a. Based on tire production, using 20 pounds as average weight for each tire and tube.
b. Based on tire production, using 25 pounds as average weight for each tire and tube.
c. Based on tire production, plus information on 1949 plan, as an average of 30 pounds per tire and tube. 127/
d. Based on tire production, using 28 pounds per tire and tube.
e. Based on tire production, using 30 pounds as average weight for tire and tube.
f. Official statistics gave tonnage production of 581 tons of motor vehicle tires and tubes, of which half would be rubber content. 128/
g. Official statistics gave tonnage production of 1,622 tons of motor vehicle tires and tubes, of which half would be rubber content. 129/
h. Official statistics gave tonnage production of 3,004 tons of motor vehicle tires and tubes, of which half would be rubber content. 130/
i. Official statistics gave tonnage of motor vehicle tires and tubes, and tubes were estimated on the basis of official statistics given for 8 months. Tires were estimated at 3,299 tons and tubes at 504 tons, giving a total of 3,803 tons, of which half is rubber content. This makes an average rubber content for a tire and tube of about 24 pounds. 131/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 10

Estimated Consumption of Rubber for Motor Vehicle Tires and Tubes in the European Satellites
1946-53
(Continued)

j. Official statistics gave 4,394 tons for output of automobile tires and 575 tons for motorcycle tires plus all motor vehicle tubes, giving a total of 4,969 tons, or 2,500 tons of rubber. This makes an average tire and tube about 25 to 26 pounds of rubber. 132/
k. Estimated on a curve of probable tonnage increase, with average tire and tube rubber weight of about 26 pounds.
l. Estimated on a curve of probable tonnage increase, with average tire and tube rubber weight of about 27 to 28 pounds.
m. Estimated on a curve of probable tonnage increase, with average tire and tube rubber content of 30 pounds.
n. Based on a reported figure of 316 tons for tires, of which 10 percent is assumed to be for bicycle and tire repair material. 133/
o. Based on a reported figure of 960 tons of tires, of which 10 percent is assumed to be for bicycle and tire repair material. 134/
p. Based on a reported figure of 1,440 tons of tires, with 10 percent deducted. 135/
q. Based on a reported figure of 2,360 tons of tires, with 10 percent deducted. 136/
r. Based on a estimated 2,647 tons of tires, with 10 percent deducted. 137/
s. Assuming a gradual rate of increase, based on reported plan of 4,000 tons of tires by 1955, with allowance made for bicycle tires and tire repair material. 138/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 11

Estimated Consumption of Rubber for Bicycle Tires and Tire Repair Material in the European Satellites
1946-53

Metric Tons

Country	1946	1947	1948	1949	1950	1951	1952	1953
Albania	5 a/	10 a/	12 a/	15 a/	19 a/	22 a/	25 a/	30 b/
Bulgaria	10 c/	15 c/	23 c/	49 c/	76 c/	100 c/	180 c/	200 c/
Czechoslovakia	850 c/	1,800 c/	2,500 c/	3,500 d/	3,600 c/	4,200 c/	4,500 c/	4,800 c/
East Germany	175 e/	250 f/	325 g/	600 h/	850 i/	1,100 j/	1,600 k/	2,100 l/
Hungary	200 m/	250 m/	300 m/	400 n/	535 o/	715 o/	900 o/	1,050 o/
Poland	290 p/	775 p/	1,264 p/	1,489 p/	1,625 p/	1,900 q/	2,200 q/	3,000 q/
Rumania	15 r/	48 r/	72 r/	102 r/	132 r/	140 r/	155 r/	170 r/
Total	1,545	3,148	4,496	6,155	6,837	8,177	9,560	11,350

a. Tire repair material was imported in early years, and no other information is available to indicate quantities, if any, of domestic preparation. 139/
b. Reportedly production of bicycle tires and retreaded tires has been noted. There is no information to indicate production or whether prepared material is imported. 140/
c. Estimated, using a factor of 20 percent of motor vehicle tire and tube production.
d. 1949 detailed plan, showing exact quantities, indicated a 20-percent factor when applied to motor vehicle tires and tubes. 141/
e. Estimated on basis of rate of decrease of production of tire repair material from 1947 data, allowing 300 tons plus a small allowance for bicycle tires. 142/
f. Based on production during the second half of 1947 of 290 tons of tire repair material. The estimate for the year was 400 tons, plus a small allowance for bicycle tires. 143/
g. Estimated on the basis of 600 tons planned for tire repair material, plus a small allowance for bicycle tires in line with second half 1948 plan of 12 tons. 144/
h. Estimated, assuming about 850 tons of tire repair material and about 400,000 bicycle tires.
i. Estimated on the basis of about 660,000 bicycle tires and about 1,100 tons of tire repair material.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 11

Estimated Consumption of Rubber for Bicycle Tires and Tire Repair Material in the European Satellites
1946-53
(Continued)

j. Estimated on the basis of about 1 million bicycle tires and 1,254 tons of tire repair material. 145/
k. Estimated on the basis of 2 million bicycle tires and 1,325 tons of tire repair material.
l. Estimated on the basis of 2 million bicycle tires and about 1,400 tons of tire repair material. 146/
m. Based on meagre data on bicycle-tire production, plus an allowance of about 10 percent for tire repair material of motor vehicle tires and tube consumption.
n. Estimated on the basis of 600,000 bicycle tires, plus an allowance of 10 percent of tonnage for motor vehicle tires and tubes as tire repair material.
o. Estimated on the basis of planned estimated goals of about 2 million bicycle tires by 1954, plus an allowance of 10 percent of tonnage for motor vehicle tires and tubes as tire repair material.
p. Derived from tonnage figures reported for bicycle tires and tubes, plus an allowance for tire repair material. 147/
q. Estimated on the basis of probable figure of tonnage increases in bicycle tires and tubes, plus an allowance for tire repair material.
r. Estimated on the basis of reported tonnage of tires, of which 10 percent is assumed to consist of tire repair material. 148/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 12

Estimated Consumption of Rubber for Transportation Goods in the European Satellites a/
1946-53

Country	1946	1947	1948	1949	1950	1951	1952	1953
Albania	N.A.	N.A.	10	20	25	25	30	30
Bulgaria	55	87	136	293	464	600	1,087	1,200
Czechoslovakia	5,069	11,063	14,769	19,000	22,520	25,570	27,095	28,620
East Germany	441	688	1,504	3,061	5,850	9,417	12,100	14,078
Hungary	545	795	1,000	1,315	1,885	2,355	3,000	3,450
Poland	580	1,585	2,766	3,389	4,125	4,900	6,100	7,950
Rumania	153	480	720	1,182	1,323	1,400	1,550	1,700
Total	6,843	14,698	20,905	28,260	36,192	44,267	50,962	57,028

a. The figures (including annual totals) in this table represent approximately the sums of parallel figures in Tables 10 and 11, above. Discrepancies are the result of unsystematic rounding.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 13

Estimated Consumption of Rubber for Nontransportation Goods in the European Satellites
1946-53

Metric Tons

Country	1946	1947	1948	1949	1950	1951	1952	1953
Albania a/	20	30	50	80	100	135	150	170
Bulgaria a/	445	573	748	807	1,036	1,200	1,113	1,300
Czechoslovakia b/	7,931	12,937	19,831	26,000	27,480	29,430	30,905	31,380
East Germany b/	12,559	16,312	16,796	16,939	20,650	20,183	22,400	25,922
Hungary a/	430	805	1,500	1,985	2,470	3,000	3,200	3,550
Poland b/	1,570	4,315	5,354	5,526	6,375	7,100	8,900	12,050
Rumania	230 c/	220 d/	780 e/	818 a/	877 a/	1,200 a/	1,250 a/	1,600 a/
Total	23,185	35,192	45,059	52,155	58,988	62,248	67,918	75,972

a. Estimated on the best judgment of industry, taking into consideration size of production, types of goods produced, trade, former patterns, and plans.
b. Based on reported consumption minus transportation uses, calculated by use of plans, reported statistics, total volume of goods, trade, and other related data.
c. Of the reported 765 tons of rubber goods produced, 316 were reported as tires. 149/
d. Of about 1,400 tons of rubber goods produced, 960 were reported as tires. 150/
e. Of 3,372 tons of rubber goods produced, 1,440 were reported as tires. 151/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 14

Estimated Total Consumption of Rubber for All Types of Rubber Goods in the European Satellites 1946-53

Metric Tons

Country	1946	1947	1948	1949	1950	1951	1952	1953
Albania a/	20	30	60	100	125	160	1[illegible]0	200
Bulgaria	500 a/	660 b/	884	1,100 d/	1,500 a/	1,800 a/	2,200 a/	2,500 a/
Czechoslovakia	13,000 a/	24,000 e/	34,600 f/	45,000 g/	50,000 h/	55,000 h/	58,000 h/	60,000 h/
East Germany	13,000 a/	17,000 a/	18,300 i/	20,000 j/	26,500 k/	29,600 l/	34,500 m/	40,000 n/
Hungary a/	975	1,600	2,500	3,300	4,355	5,355	6,200	7,000
Poland	2,150 o/	5,900 p/	8,120 q/	8,915 r/	10,500 s/	12,000 s/	15,000 s/	20,000 s/
Rumania	383 t/	700 u/	1,500 v/	2,000 w/	2,200	2,600	2,800	3,300
Total	30,028	49,890	65,964	80,415	95,180	106,515	118,880	133,000

a. Estimated on the basis of judgment of industry, size of imports, and other related data.
b. Estimated on the basis of reported increase of 132 percent of 1946, as representing relative growth of industry. 152/
c. Estimated on the basis of reported increase of 34 percent over 1947.
d. The 1949 third quarter showed a 50-percent increase over the corresponding period of 1948. 153/
e. Estimated on plans which called for 7,500 tons of synthetic and 9,000 tons of natural rubber, with an estimated consumption of reclaimed rubber of 7,500 tons. 154/
f. Consumption of natural and synthetic rubber was reported to be 25,201 natural and 920 tons of synthetic rubber. 155/ Consumption of reclaimed rubber is estimated at 8,500 tons.
g. Estimated that 26,000 natural, 10,000 synthetic, and 9,000 tons of reclaimed rubber were used, based on planned figures. 156/
h. Based on the Five Year Plan and reported changes in various types of goods and data on rubber trade. 157/
i. Reported consumption was 14,900 tons of synthetic rubber and 1,000 tons of natural rubber; consumption of reclaimed rubber is estimated at 2,400 tons.
j. Based on reported plans for synthetic and natural rubber, plus related data.
k. Consumption was reported to include 21,200 tons of synthetic and 2,161 natural rubber; reclaimed rubber consumption of 3,000 tons is estimated. 158/
l. Consumption was reported to include 24,000 tons of synthetic and 2,100 tons of natural rubber; reclaimed rubber consumption of 3,500 tons is estimated. 159/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 14

Estimated Total Consumption of Rubber for All Types of Rubber Goods in the European Satellites
1946-53
(Continued)

m. Consumption was reported to include 28,400 tons of synthetic and 2,119 tons of natural rubber; consumption of reclaimed rubber of 4,000 tons is estimated. 160/
n. Plans indicate consumption of 32,000 tons of synthetic and 3,000 tons of natural rubber; consumption of reclaimed rubber of 5,000 tons is estimated. 161/
o. Based on announced production of rubber goods of 4,300 tons. 162/
p. Based on planned consumption figures. 163/
q. Based on half-year consumption and plans for the year. 164/
r. Based on planned consumption, plus related data. 166/
s. Assuming transportation goods would make up about 40 percent of total consumption of rubber, plus plans, trade, and related factors.
t. Based on announced production of 765 tons of rubber goods. 166/
u. Based on reported production of rubber goods of about 1,400 tons per year, plus trade data and other related factors. 167/
v. Output of rubber goods to be about 3,000 tons. 168/
w. Estimated on basis of planned tire production, plus related data as logical rate of increase from year to year.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

III. Types of Rubber Used for Various Types of Rubber Goods.

The types of rubber used in manufacturing the various classes of Soviet rubber goods in the European Satellites are not definitely known. From information available on individual plants, from plans for the industry, and from various other sources, it is apparent, however, that a determined effort is being made under the direction of the USSR to maximize the use of domestic rubber, particularly synthetic, in the production of rubber goods. Following Soviet press announcements of great self-sufficiency in domestic rubber production, a concerted emphasis was placed on using greater quantities of synthetic and reclaimed rubber in the Satellite rubber industries.

It was stated that the basic postwar raw material in Poland is synthetic rather than natural rubber. 169/ As shown below, whereas actual use of synthetic rubber in 1948 appeared to be less than planned, a significant percentage of the total rubber used was synthetic. 170/

	Plan	Actual*
Natural	15	28
Synthetic	61	47
Reclaimed	24	25*

The 1951 plan provided for consumption of natural rubber to decrease by about 17 percent as a result of increased use of synthetic and reclaimed rubber. 171/ The Polish Six Year Plan (1950-55), provided for the production of reclaimed rubber to be 25 percent of the raw material (rubber) used. 172/

Czechoslovakia has started production of some footwear from synthetic and plastics materials, and the possibility of shifting some products formerly made of rubber to production from plastics reportedly was being studied in early 1951. Achievements reported included production of chloroprene synthetic leather, production of soles and welts from polyvinylchloride, and production of various acrylates. 173/ Samples of rubber boots obtained from Czechoslovakia in early 1951 showed a composition of the buna-type synthetic rubber. 174/

* Based on actual consumption of natural and synthetic rubber used during the first half of the year and assuming that 25 percent of total rubber was reclaimed rubber.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Tires at the Nachod plant are said to be 90 percent synthetic, and during 1951-52 research work was done on the use of buna compounds for treads and carcasses of tires in an attempt to obtain better quality and longer wear and to increase buna consumption. 175/

Rubber gas tanks for airplanes reportedly are made of 90 percent synthetic and 10 percent natural rubber. Gas masks are of pure rubber. 176/ Use of polyvinylchloride for shoe manufacture and for sealing and shock-absorbing purposes in the automotive industry was being studied in 1951. Research work on the substitution of buna rubber for natural rubber was also planned for 1951, indicating a greater future use of synthetic rubber in rubber compounds. Research on the use of plastics for sponges and airplane wing inserts was in progress in 1951. 177/

Practice varies, of course, among the different Satellites. East Germany, which has a large production of synthetic rubber, used over 70 percent synthetic rubber for all types of rubber goods in 1952. Analysis of tires made in East Germany (solid tire and tread stock samples) showed a small amount of what appeared to be a mixture of natural and reclaimed synthetic rubber, the remainder being synthetic rubber. 178/

Only very small amounts of natural rubber are imported, and rubber plants are compelled to use mostly synthetic rubber. Scrap rubber is collected, processed, and used mainly in the manufacture of bicycle tires. Rubber plants seldom use more than 3 percent natural rubber in the production of tires. This percentage is increased in tires made for Soviet military vehicles. 179/

Natural rubber is used mainly in the production of meteorological balloons, surgical and hygienic articles, rubber threads, motor vehicle tires and tubes, and several technical articles which require special elasticity. 180/

Polyvinylchloride reportedly is used for lining storage vessels for the chemical industry in Hungary as an attempt to replace synthetic rubber, which it was said would not resist acid corrosion. 181/ Hungary appears to be relying more and more on synthetic rubber, and admixture proportions of synthetic rubber are constantly being improved. 182/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

It is reported that in Rumania tires produced at the Banloc plant are made of synthetic rubber and small amounts of natural rubber. 183/ Shoes are made of synthetic rubber and about 20 percent re-used natural rubber. 184/

In all countries, including the European Satellites, reclaimed and/or synthetic rubber is used widely in goods produced for nontransportation purposes. The principal consumers of natural rubber in the nontransportation field are the producers of drug sundries, who require only very small quantities of rubber.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX C

EUROPEAN SATELLITE TRADE IN RUBBER AND RUBBER PRODUCTS

I. Discussion.

A. Qualifying Factors.

1. Imports from Non-Soviet Bloc Countries.

The scarcity of reliable data about actual imports of rubber and rubber products by the European Satellites from non-Soviet Bloc countries inevitably makes any study of trade in those commodities, based on such data, somewhat speculative. There are available, however, reliable export statistics of non-Bloc countries, and these statistics provide a firm base for general quantitative estimates. Such estimates are qualified, of course, by unrecorded reshipments of, and covert trade in, both rubber and rubber products.

2. Intra-Soviet Bloc Trade.

Virtually no reliable information about intra-Soviet Bloc trade in rubber and rubber products is available. Some reasonable estimates can be made on the basis of a comparison of rubber production and consumption in the individual Satellites, but even these estimates are subject to a rather wide margin of error.

B. Country Dependence on Trade.*

1. Albania.

Albania depends on imports for most of its small requirements of rubber products, which averaged about 300 tons in prewar years, as well as for the negligible quantities of rubber needed by its industries.

UNRRA supplied Albania with tires and tubes and tire repair material immediately after World War II. 185/ Following its absorption into the Soviet Bloc, supplies of rubber, tires, and other rubber goods have been obtained mainly from Soviet Bloc countries, particularly the USSR and Czechoslovakia.

* Statements made in this section represent the best judgment of the analyst, based on available information.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

2. Bulgaria.

Before the war, Bulgaria consumed annually about 1,000 tons of raw rubber, imported mainly from Malaya and the Dutch East Indies. Motor and bicycle tires formed the bulk of the 400 to 500 tons of manufactured rubber goods imported each year. During the war, Bulgaria was almost wholly dependent on imports for raw materials, and its essential requirements for the armed forces were supplied by Germany. 186/

In postwar years, imports of raw rubber came from Malaya and from re-exports of the Netherlands and the UK as well as from the USSR. Under terms of a trade agreement with the USSR, Bulgaria reportedly received "rubber" valued at 1.7 billion leva from 1945 to the end of 1948. 187/ The USSR has also supplied tires, in addition to quantities supplied by Western countries. 188/

3. Czechoslovakia.

Czechoslovakia is the largest consumer and importer of rubber among the European Satellites. Rubber imports totaling over 17,000 tons in 1937 had increased to about 50,000 tons by 1953. In recent years, part of the surplus of rubber obtained by China from Southeast Asia reportedly was supplied to Czechoslovakia. 189/ In addition to traditional suppliers of rubber, such as Malaya, Indonesia, and Ceylon, re-exports of rubber through the Netherlands, the UK, and West Germany have shown sizable increases during recent years. 190/

Czechoslovakia also exports considerable quantities of rubber fabricated goods, including tires, conveyor belting, rubber footwear, and a variety of technical rubber goods, to Western countries and to the other countries in the Soviet Bloc. Some dumping of these rubber goods in Western countries, reported since the war, was believed to be a method of obtaining foreign currency. 191/ At one time it was reported that the Svit plant at Gottwaldov, the largest rubber-fabricating plant in Czechoslovakia, was exporting almost 80 percent of its entire production to the USSR. 192/ Many of the Satellites still depend on Czechoslovakia for a number of types of rubber fabricated goods.

4. East Germany.

Natural rubber imported by East Germany came from Western sources in early postwar years. Since 1951, however, some natural rubber has been supplied by the USSR, which, in turn, has obtained it from the West. Additional supplies arrive as re-exports from the

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Netherlands. During 1951, East Germany obtained unusually large supplies of natural rubber, as re-exports from the Netherlands, totaling 9,095 tons. This tonnage has not been reported in official statistics, and the final disposition of this rubber is not definitely known. It has been surmised, however, that a majority of this tonnage may have been for Czechoslovak consumption, possibly as a barter arrangement for tires needed by East Germany. There is also an indication that some of this rubber may have been shipped to the USSR.

Since the end of World War II, East Germany has consumed only about half of its production of synthetic rubber. The actual quantities sent to final recipients are undetermined, and the intra-trade deals within the Soviet Bloc make final destinations obscure. Some rubber is shipped as reparations, both to the USSR and to Poland, while quantities are also labeled exports to these countries as well as to other Satellites. In two cases noted, part of the monthly quota for the USSR and for Poland was shipped to Czechoslovakia. Total East German exports, at least since 1949, have been fairly well established.

The distribution of tires in East Germany is also a rather complex problem. Although the country produces sufficient numbers of tires for its requirements, some tires are exported, and a great many more are allocated to Soviet military forces. These tires are listed variously under reparations, government contracts, barter, and exports. To supplement domestic production, some tires of special sizes must be imported.

This dependence on imports is believed to be caused primarily by the lack of sufficient mold capacity in the larger sizes. It has been reported that shipments of automobile tires in 1953 were to come almost entirely from the USSR and the quotas for the first and second quarters of 1953 had been fulfilled. Large-size automobile tires are said to constitute a bottleneck in Soviet tire shipments, and they are supplied with great delay or not at all. 193/ During 1952 it was noted that tires sent by Czechoslovakia were predominantly of sizes 900 x 24 and over and that those from the USSR were mainly of size 750 x 20. 194/

5. Hungary.

About 3,000 tons of natural rubber were imported annually in prewar years, and most of the demand for rubber products was in imports of finished rubber goods, totaling about 500 tons. Hungary now

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

obtains natural rubber from Malaya and Indonesia as well as synthetic rubber from East Germany and the USSR. Some industrial rubber goods, such as conveyor belts and hose piping, are exported to Soviet Bloc countries in exchange for other rubber goods. These exports are small, however, and amount to only a few hundred tons yearly.

6. Poland.

Prior to World War II, Poland imported about 6,300 tons of natural rubber annually. Since the end of the war, Poland, with other Soviet Bloc countries, has obtained rubber from the main producing areas in Southeast Asia and as re-exports from Western countries. Imports of natural rubber have increased to about 20,000 tons annually at the present time, and some synthetic rubber comes from East Germany and the USSR.

Some tires also have been imported, the main Western supplier being the UK, as far as available data indicate. Poland has recently acquired a new role as a sort of middle-man for imports of tires and rubber destined for Communist China. One report states that rubber and rubber products are transported to Communist China by Polish ships, and old rubber goods are obtained in Western Europe through intercessors, with consignees given as Indian firms. It was also reported that strategic items are frequently transported, especially from armament factories in Czechoslovakia via the Polish port of Gdynia. 195/

7. Rumania.

Natural rubber imports by Rumania in prewar years were about 2,000 tons annually, and finished rubber goods were imported to meet domestic demand. Since World War II, imports of natural rubber from producing countries of Southeast Asia have totaled from 1,000 to 1,500 tons per year, and additional supplies of rubber as well as rubber fabricated products are supplied by the USSR. Some Western countries, mainly the Netherlands and the UK, have continued to supply small quantities of tires to Rumania.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

II. Statistical Tables.

A. Trade in Natural, Synthetic, and Reclaimed Rubber.

Statistical information about European Satellite trade in natural, synthetic, and reclaimed rubber is presented in Table 15* and Table 16.**

Estimates of the quantities of natural rubber imported by the Satellites are derived mainly from the statistics of exporting countries and will not necessarily be the same as supply figures estimated on some other basis. For purposes of comparison, the supply figure for each of the Satellites, as estimated by the International Rubber Study Group, is given in the tables as the RSB (Rubber Statistical Bulletin) Estimate. It will be noted that, beginning with the statistics for 1949, the RSB estimates are considerably lower than those based on export statistics. No RSB estimates of supplies of synthetic and reclaimed rubber are available.

B. Trade in Rubber Products.

Available information about European Satellite trade in rubber products is very scanty, and reported figures are often both incomplete and unreliable. There are available, however, considerable firm data on trade in motor vehicle tires. Consequently, only trade in that commodity is analyzed in Tables 17*** and 18.****

* Table 15 follows on p. 52.
** Table 16 follows on p. 68.
*** Table 17 follows on p. 72.
**** Table 18 follows on p. 78.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
1946

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya Indonesia Ceylon UK (Re-exports) Other	a/*		1,205		80			1,285
Total, Natural		N.A.	N.A.	1,205 b/	N.A.	80	N.A.	N.A.	1,285
RSB Estimate		N.A.	N.A.	779	N.A.	256	1,450	N.A.	2,485
Synthetic	US Canada						472 198/		472
	East Germany USSR			5,000 c/			2,100		7,100
Total, Synthetic		N.A.	N.A.	5,055 b/	N.A.	N.A.	2,572	N.A.	7,572
Reclaimed	US Other								
Total, Reclaimed		N.A.	N.A.	1,530 b/	N.A.	N.A.	N.A.	N.A.	1,530
Grand Total, All Types of Rubber		N.A.	N.A.	7,790 b/	N.A.	80	4,530 d/	300 e/	12,700

* Footnotes for Table 15, 1946, follow on p. 53.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
1946
(Continued)

a. Of a total program of aid to Albania by UNRRA of $89,000 for tire repair material, as of 1 April 1947, $32,000 was received; the balance of $57,000 was to be shipped. 196/
b. Czechoslovak receipts of rubber during 1946 were reported as 791 tons of natural, 5,055 synthetic, and 1,530 of scrap rubber. 197/
c. Estimated.
d. UNRRA reported 1,983 tons of rubber supplied by UNRRA and 2,547 tons from other origins. 199/
e. Type of rubber not specified, imported from May 1945 to 31 December 1946. 200/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1947

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya			3,509		76	3,010	118 201/	6,713
	Indonesia						795		795
	Ceylon								
	UK (Re-exports)			1,734		795	551	14 202/	3,094
	US (Re-exports)								
	USSR						120 a/*	b/	120
Total, Natural		N.A.	N.A.	5,243	N.A.	871	4,476	132	10,722
RSB Estimate		N.A.	300	14,767 c/	N.A.	2,377	2,250	100	19,794
Synthetic	US			79 203/		7			86
	Canada			1,413 204/					1,413
	East Germany						2,800 d/		2,800
	USSR							650 a/	650
	Other						1,600 e/		1,600
Total, Synthetic		N.A.	N.A.	1,776 c/	N.A. f/	7	4,400	650	6,833
Reclaimed	US								
	UK			110		10			120
Total, Reclaimed		N.A.	N.A.	1,706 c/	N.A.	10	N.A.	N.A.	1,716
Grand Total, All Types of Rubber		N.A.	N.A.	18,506 c/	N.A.	888	8,876 e/	782	29,052

* Footnotes for Table 15, 1947 follow on p. 55.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1947

a. Provided for under terms of the 1946 trade agreement, date of delivery unknown. 205/
b. Plan provided for the USSR to supply 650 tons of rubber. Among reported shipments, at least 597 tons were noted from the USSR; it is not known whether they were natural or synthetic rubber. Another report stated 462 tons out of 650 tons were shipped. 206/
c. Czechoslovak statistics reported 15,024 tons of natural, 1,776 synthetic, and 1,706 tons of scrap rubber received. 207/
d. Foreign Trade Division of SMA (Soviet Military Authority) sold at $475.00 per ton. 208/
e. UNRRA reported that 1,497 tons came from UNRRA and 200 tons from other sources. 209/
f. 320 million reichsmarks of synthetic rubber reported exported. 210/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1948

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya		350	4,377			1,940	1,492	8,159
	Indonesia						257		257
	Ceylon		110 a/*				511		621
	UK (Re-exports)			5,810		332	289		6,431
	US (Re-exports)								
	Netherlands				928				928
	Belgium			636		1,237	13		1,886
	Nigeria			935					935
	Czechoslovakia							6,000 b/	6,000
	Hungary							100 c/	100
	Other	12 d/							12
Total, Natural		12	460	11,758 e/	928	1,569	3,010	7,592	25,329
RSB Estimate		N.A.	150	23,358	N.A.	3,000	3,600	1,000	31,108
Synthetic	US			0					
	Canada			39			693		730
	East Germany			2,000 f/		500	5,247 g/	650	7,747
	USSR		500 h/	1,000 i/					2,150
Total, Synthetic		N.A.	500	3,039 e/		500	5,940	650	10,629
Reclaimed	US								
	UK	N.A.	N.A.	590	N.A.	5	N.A.	N.A.	595
Total, Reclaimed		N.A.	N.A.	590	N.A.	5	N.A.	N.A.	595
Grand Total, All Types of Rubber		12	960	15,387 j/	928	2,074	8,950	8,242	36,553

* Footnotes for Table 15, 1948, follow on p. 57.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1948

a. Including re-exports; taken from Department of Commerce figures of Ceylon customs returns.
b. Under terms of Czechoslovak-Rumanian trade agreement. 211/
c. Under terms of Hungarian-Rumanian trade agreement. 212/
d. Came via Trieste. 213/
e. Reported figures of 23,535 tons of natural rubber and 1,538 of synthetic rubber were reported. 214/
f. Trade agreement. 215/
g. Trade agreement quotas provided for 4,500 tons. 216/
h. Trade agreement. 217/
i. Planned. At least 559 tons were noted in shipments. 218/
j. Czechoslovak press reported 17,600 tons of rubber received in 7 months of 1948.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1949

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya		342	4,641		285	7,909	1,132	14,309
	Indonesia		a/*				709		709
	Ceylon						125		125
	UK (Re-exports)		176	3,917		275	149	18	4,535
	US (Re-exports)								
	Netherlands		246	8,521	1,270 220/	4,476	978		15,491
	Germany			17,463		3,663			21,126
	Belgium			737 b/		218 c/			955
	Nigeria			1,212					1,212
	USSR				497 223/				497
Total, Natural		N.A.	764	36,491	1,767	8,917	9,870	1,150	58,959
RSB Estimate		N.A.	925	27,500	N.A.	8,500	12,000	1,250	50,175
Synthetic	US								423
	Canada			423 d/					
	East Germany			5,000 e/		2,000 f/			7,000
	USSR			8,045	1,000 226/		750 g/		9,795
Total, Synthetic		N.A.	N.A.	13,468	1,000	2,000	750		17,218
Reclaimed	US								
	UK			799					799
Total, Reclaimed		N.A.	N.A.	799	N.A.	N.A.	N.A.	N.A.	799
Grand Total, All Types of Rubber		N.A.	764	51,522 h/	1,767	9,917	11,870	1,900	76,976

* Footnotes for Table 15, 1949, follow on p. 59.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1949

a. Planned trade of 200 to 300 tons of rubber. 219/
b. Of which 47 tons from the UK; 12 tons from Nigeria, 401 tons from Malaya; 159 tons from US; 56 tons from Belgian Congo; 262 tons from Canada; including natural and synthetic rubber. 221/
c. Of which 38 tons from the UK, 24 tons from Communist China, 155 tons from Malaya, and 1 ton from the US. 222/
d. During 8 months.
e. Trade agreement for 1 July 1948 to 30 June 1949 provided for 5,000 tons. 224/
f. Delivered as per contract; another source gives trade agreement for 1949 of 3,000 tons. 225/
g. Reported as raw rubber; other references to 423 tons during various months may be same. 227/
h. Czechoslovak press reported 22,300 tons received in 7 months of 1949. 228/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1950

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya			8,460		204	4,115	7	12,786
	Indonesia						850		850
	Ceylon						100		100
	UK (Re-exports)		453 a/*	1,122		140	193	93 a/	2,001
	US (Re-exports)								
	Netherlands		78 b/	1,770	504 230/	2,186 231/	1,422 232/	78	6,038
	Germany			16,245 a/		3,482		9 c/	19,736
	Belgium			1,299 d/		263 d/	12 d/	20 d/	1,594
	Nigeria			1,607					1,607
	USSR				1,000 234/				1,000
	Other			1,388 e/					1,388
Total, Natural		N.A.	531	31,891	1,775 236/	6,275	6,692	207	47,371
RSB Estimate		N.A.	775	22,500	N.A.	6,500	5,500	575	35,850
Synthetic	East Germany	208 237/					1,717 f/		1,925
	USSR		1,000					2,000	3,000
	Other					15 g/			15
Total, Synthetic		208	1,000	N.A.		15	1,717	2,000	4,940
Reclaimed									
Total, Reclaimed		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Grand Total, All Types of Rubber		208	1,531	31,891	1,775	6,290	8,409	2,207	52,311

* Footnotes to Table 15, ~~1950, follow on p. 61.~~

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1950

a. During 10 months.
b. One report gives 801 tons for 11 months. 229/
c. For 1 month.
d. One report gives only 158 tons for Czechoslovakia and 197 for Hungary. 233/
e. Of 19,404 tons of natural rubber delivered January to September 1951, this amount came from China in April. 235/
f. Deliveries of 2,130 contracted. 238/
g. Neoprene from Belgium, 239/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1951

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya			9,520	47 a/*		9,410	65	19,042
	Indonesia			63		b/	1,226		1,289
	Ceylon						920		920
	UK (Re-exports)		100 b/	141	234	84	25	350 c/	934
	US (Re-exports)								
	Netherlands		70	4,143	9,095	205 d/	1,523		15,036
	Germany								
	Belgium			646 e/					646
	Nigeria			1,570 245/ f/					1,570
	USSR				1,305 246/				1,305
	Czechoslovakia	19.4 g/							19
	Austria			1,000 248/					1,000
Total, Natural		19.4	170	17,083	10,681 h/	1,129	13,104	415	42,601
RSB Estimate		N.A.	275	11,000	N.A.	250	11,500	600	23,625
Synthetic	US						1		1
	Canada								
	East Germany	175 250/ j/		1,443 i/					1,618
	USSR		2,000 253/						2,000
Total, Synthetic		175	2,000	1,443		N.A.	1	N.A.	3,619
Reclaimed	US								
	UK								
Total, Reclaimed		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Grand Total, All Types of Rubber		194	2,170	18,526	10,681	1,129	13,105	415	46,220

* Footnotes for Table 15, 1951, follow on p. 63.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1951

a. For 1 month.
b. An old agreement between the Netherlands-Indies and Hungary provided for 1,200 tons of rubber for Hungary; a new agreement 1 July 1951 to 1 July 1952 provides for 2,200 tons of rubber. 240/
c. During December 1951.
d. In September, 98 tons of rubber were reported transshipped via Rostock and Wismar from Antwerp. 241/ From 1 to 30 November, 249 tons were reported originating in West European ports, part Antwerp and Rotterdam, via Rostock/Warnemuende. 242/ This gives 347 tons total.
e. Of which 20 tons were from Belgian Congo, 365 Malaya, and 261 UK. 243/
f. During 1 to 10 October, goods received in Rostock, Warnemuende, Stralsund, and Wismar from Benelux ports and Hamburg, as well as from Sweden and Denmark in transit to Hungary (probably came from Benelux). 244/
g. 345 tons were shipped as tire repair material; if this was compounded, only half would be rubber content. 247/
h. Although only 1,940 tons were listed as imports on official reports, 249/ actual reported shipments are over 10,000 tons. It is believed that this extra rubber was probably destined for Czechoslovakia and possibly some for the USSR.
i. Planned, but actual imports were probably more. 251/
j. Reported on a Dirnes rubber plant states that the plant received about 80 tons of both natural and synthetic rubber from USSR each year. 252/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1952

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya		300	17,205		1,365	6,039	1,647	26,556
	Indonesia					a/*	16,841		16,841
	Ceylon			630			1,326		1,956
	UK (Re-exports)		200 b/	95		20	25		340
	US (Re-exports)								
	Netherlands		100	12,220	536	4,390	6,742		23,988
	Germany			9,321 256/					9,321
	Belgium								
	Nigeria			1,200 257/	c/				1,200
	USSR								
Total, Natural		N.A.	600	40,671	2,150 259/ f/	5,775	30,973	1,647	81,816
RSB Estimate		N.A.	575	20,000	N.A.	4,750	20,000	2,750	48,075
Synthetic	US								
	East Germany	50 260/		1,540 261/		557 d/	700 263/	200 264/	3,047
Total, Synthetic		50	N.A.	1,540		557	700	200	3,047
Reclaimed	US								
	UK								
Total, Reclaimed		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Grand Total, All Types of Rubber		50	600	42,211	2,150	6,332	31,673	1,847	84,863

* Footnotes for Table 15, 1952, follow on p. 65.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1952

a. Indonesian-Hungarian trade agreement of 16 October 1952, provided for 2,500 tons of rubber in the year 1 October 1952 to 30 September 1953. 254/
b. Reported shipments total around 176 tons, and additional 28 tons reported. 255/
c. Plan provided for the USSR to supply 2,000 tons. 258/
d. Trade agreement specified 515 tons. 262/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1953

Metric Tons

Type of Rubber	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
Natural	Malaya		200 a/*	11,565 b/		205 a/	5,648 b/		17,618
	Indonesia			c/			6,727 d/		6,727
	Ceylon			309 e/		d/			390
	UK (Re-exports)		271 266/	2 d/			1 d/		274
	US (Re-exports)			f/		f/	f/		
	Netherlands			710 a/	128 a/	3,369 a/	9,252 a/		13,459
	Germany								
	Belgium								
	Nigeria			530					530
	Czechoslovakia	6 g/							6
	Egypt		101 h/						101
	USSR				1,121 i/			200 j/	1,121
	Other			200 270/					400
Total, Natural		6	572	13,397	1,249	3,574	21,628	200	40,626
RSB Estimate		N.A.	300	10,350	N.A.	5,225	17,000	125	33,000
Synthetic	US			d/			d/		N.A.
	East Germany			1,800 k/					1,800
	USSR	17.5 273/	18 274/						35
Total, Synthetic		17.5	18	1,800		N.A.	N.A.	N.A.	1,835
Reclaimed	US								
	UK								
Total, Reclaimed		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Grand Total, All Types of Rubber		23.5	590	15,197	1,249	3,574	21,628	200	42,461

* Footnotes for Table 15, 1953, follow on p. 67.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 15

European Satellite Imports of Natural, Synthetic, and Reclaimed Rubber
(Continued)
1953

a. For 6 months.
b. For 10 months.
c. Indonesia-Czechoslovak trade agreement, believed renewed, has a quota of 3,500 tons. 265/
d. For 9 months.
e. For 3 months.
f. For 9 months.
g. Tire repair material amounting to 8 tons (of which rubber content is assumed to be half), and 2 tons of rubber were reportedly received. 267/
h. Trade agreement for 1953 provides for Egypt to supply 450 tons of natural rubber. 268/
i. Received during the first quarter of 1953. 269/
j. From Communist China. 271/
k Plan. 272/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 16

European Satellite Exports of Natural, Synthetic, and Reclaimed Rubber
1946-53

Metric Tons

Year	Type of Rubber	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1946	Synthetic	Czechoslovakia				5,000 a/				5,000 a/
		Poland				2,100				2,100
		Total, Synthetic	N.A.	N.A.	N.A.	7,100	N.A.	N.A.	N.A.	7,100
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	7,100	N.A.	N.A.	N.A.	7,100
1947	Synthetic	Poland				2,800 275/				2,800
		Total, Synthetic	N.A.	N.A.	N.A.	2,800	N.A.	N.A.	N.A.	2,800
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	2,800	N.A.	N.A.	N.A.	2,800
1948	Natural	Czechoslovakia							6,000 276/	6,000
		Hungary							100 277/	100
		Total, Natural	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	6,100	6,100
1948	Synthetic	Austria				80 278/				80
		Czechoslovakia				2,000 b/				2,000
		West Germany				827 279/				827
		Hungary				500 b/				500

a. Estimated.
b. Trade agreement.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 16

European Satellite Exports of Natural, Synthetic, and Reclaimed Rubber
1946-53
(Continued)

Metric Tons

Year	Type of Rubber	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1948	Synthetic (Continued)	Poland				5,247 280/				5,247
		USSR				7,222 c/				7,222
		Total, Synthetic	N.A.	N.A.	N.A	15,799 d/	N.A.	N.A.	N.A.	15,799
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	15,799	N.A.	N.A.	N.A.	15,799 d/
1949	Synthetic	Czechoslovakia				3,000 281/				3,000
		Poland				2,000 282/				2,000
		USSR				6,385 283/				6,385
		Total, Synthetic	N.A.	N.A.	N.A.	11,385	N.A.	N.A.	N.A.	11,385
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	11,385	N.A.	N.A.	N.A.	11,385
1950	Natural	Switzerland			193 284/		2 285/			195
		Total, Natural	N.A.	N.A.	193	N.A.	2	N.A.	N.A.	195
	Synthetic	Albania				208 286/				208
		Austria				203 287/				203
		Poland				1,717 288/				1,717
		Total, Synthetic	N.A.	N.A.	N.A.	16,900 289/	N.A.	N.A.	N.A.	16,900
	Grand Total, All Types of Rubber		N.A.	N.A.	193	16,900	2	N.A.	N.A.	17,095

c. Listed as reparations and Soviet contingent.
d. Reported.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 16

European Satellite Exports of Natural, Synthetic, and Reclaimed Rubber
1946-53
(Continued)

Metric Tons

Year	Type of Rubber	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1951	Natural	Albania			19.4 290/					19
		Total, Synthetic	N.A.	N.A.	19.4	N.A.	N.A.	N.A.	N.A.	19
	Synthetic	Albania				175 291/				175
		Austria				210 292/				210
		Czechoslovakia				1,443 e/				1,443
		USSR				8,500 294/				8,500
		Total, Synthetic	N.A.	N.A.	N.A.	24,300 295/	N.A.	N.A.	N.A.	24,300
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	24,300	N.A.	N.A.	N.A.	24,300
1952	Synthetic	Albania				50 296/				50
		Czechoslovakia				1,540 297/				1,540
		Hungary				557 f/				557
		Poland				700 299/				700
		Rumania				200 300/				200
		USSR				24,000 g/				24,000
		Total, Synthetic	N.A.	N.A.	N.A.	28,000	N.A.	N.A.	N.A.	28,000
	Grand Total, All Types of Rubber		N.A.	N.A.	N.A.	28,000	N.A.	N.A.	N.A.	28,000

e. Plan for 1,443 tons reported, but actual shipments were probably more. 293/
f. Trade agreement provided for 515 tons, but 557 tons were reported. 298/
g. 1,000 tons were listed as occupation costs, 301/ but total plans were reported at 24,000 tons. 302/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 16

European Satellite Exports of Natural, Synthetic, and Reclaimed Rubber
1946-53
(Continued)

Metric Tons

Year	Type of Rubber	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1953	Natural	Albania			6 304/					6
		Total, Natural	N.A.	N.A.	6	N.A.	N.A.	N.A.	N.A.	6
	Synthetic	Czechoslovakia				1,800 305/				1,800
		USSR				10,000 h/				10,000
		Total, Synthetic	N.A.	N.A.	N.A.	29,400 i/	N.A.	N.A.	N.A.	29,400
	Grand Total, All Types of Rubber		N.A.	N.A.	6	29,400	N.A.	N.A.	N.A.	29,406

h. Planned as total shipments (reparations ?). 306/
i. Planned total exports. 307/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53

Units

Year	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1946	US			14,307 a/*					14,307
	USSR		72,000 b/					5,180 310/	77,180
	Other	c/							
	Total	N.A.	72,000	14,307	N.A.	N.A.	N.A.	5,180	91,487
1947	US			54,459 a/					54,459
	UK	909 312/		28,038 313/		361 314/	20,284 315/	4 316/	49,596
	USSR							8,745 317/	8,745
	Czechoslovakia				10,000 d/				10,000
	Total	909	N.A.	82,497	10,000	361	20,284 e/	8,749	122,800
1948	US		1,200 320/						1,200
	UK		604 321/	3,241 322/		1,780 323/	23,128 324/	26 325/	28,779
	USSR							10,500 326/	10,500
	Belgium				120 327/				120
	Czechoslovakia				49,000 328/		f/		49,000
	West Germany				1,507 330/				1,507
	Italy				2,000 331/				2,000
	Poland				4,000 332/				4,000
	Switzerland g/								
	Total	N.A.	1,804	3,241	91,100 h/	1,780	23,128	10,526	131,579

* Footnotes for Table 17, 1946-48, follow on p. 73.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53
(Continued)

a. Of which truck and automobile tires were only 12,486 in 1946 and 40,982 in 1947. 308/
b. Total sent during years 1945-47. 309/
c. Of a total program of UNRRA aid to Albania of $392,000 for tires and tubes, as of 1 April 1947, $35,000 had been shipped, $207,000 received, with the balance of $150,000 to be sent. 311/
d. Trade agreement. 318/
e. Total imports of tires, tubes, and rims reported as 1,983 tons in 1947 and 1,588 in 9 months of 1948. 319/
f. Trade agreement for 1 July 1948 to 30 June 1949 allows for 75 million koruny of automobile tires. 329/
g. Bulgaria attempted to get 3,300 tires of size 750 x 20 and above via Switzerland. 333/
h. Reported as 91,000 metric tons.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53
(Continued)

Units

Year	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1949	US	34 334/	4 335/			24 336/			62
	UK		1,117 337/	1,018 338/		671 339/	21,303 340/	209 341/	24,318
	USSR							987 342/	987
	Czechoslovakia				32,801 343/				32,801
	Italy				1,307 344/				1,307
	Netherlands				849 345/				849
	Poland				3,380 346/				3,380
	Sweden				2,284 347/				2,284
	Switzerland				479 348/				479
	Total	34	1,121	1,018	41,100 a/*	695	21,303	1,196	66,467
1950	UK			236 350/		131 351/	10,599 352/	330 353/	11,296
	USSR								
	Italy		502 354/		149 355/		b/		651
	Total	N.A.	502	236	66,700 357/	131	10,599	330	78,498
1951	UK						1,593 c/		1,593
	USSR	d/							
	Austria								
	Belgium				2,100 361/	e/			2,100
	Czechoslovakia				2,200 f/				2,200
	Italy				g/		100 364/		100
	Netherlands				240 365/				240
	Poland				h/				
	Total	N.A.	N.A.	N.A.	20,800 367/	N.A.	1,693	N.A.	22,493

* Footnotes for Table 17, 1949-51, follow on p. 75.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53
(Continued)

a. Plan reportedly at one time was 150,000 units; it is not known whether this was accomplished. 349/
b. $800,000 of tires sent. 356/
c. During 1 month, reported. 358/
d. Unstated quantity of tires received from USSR. 359/
e. 9 boxcars of tires received. 360/
f. Arrived in October 1951. 362/
g. 7 metric tons reported. 363/
h. 97 cars reported. 366/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53
(Continued)

Units

Year	Exporting Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1952	UK		90,502 368/	10,868 369/	1,076 370/	317 371/	222,879 372/		325,642
	USSR	3,150 373/			16,100 374/				19,250
	Czechoslovakia	2,350 375/			12,500 376/				14,850
	Belgium and Luxemburg		a/*		b/	a/	a/		
	France						85,158 379/		85,158
	West Germany				100 380/	25,697 381/	111,911 382/	8,055 383/	145,763
	Italy				12,500 384/		179,200 385/		191,700
	Netherlands				1,830 386/				1,830
	Total	5,500	90,502	10,868	30,896 387/	26,014	599,148	8,055	770,983
1953	USSR				14,297 388/	30 389/			14,327
	Czechoslovakia	4,500 390/			2,054 391/				6,554
	Belgium and Luxemburg		c/	c/	c/				
	West Germany				2 393/	c	c/		2
	Netherlands							28	28
	Rumania	1,340 d/							1,340
	Switzerland							38 396/	38
	Total	5,840	N.A.	N.A.	40,000 e/	30	N.A.	66	45,936

* Footnotes for Table 17, 1952-53, follow on p. 77.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 17

European Satellite Imports of Motor Vehicle Tires
1946-53
(Continued)

a. Imports totaled 6,000 francs by Czechoslovakia, 4,000 francs by Hungary, and 2,000 francs by Poland. 377/
b. 30 metric tons reported. 378/
c. During January to May, 1,000 francs reported to Bulgaria, 10,000 to Czechoslovakia, 1,000 to Poland, and 15,000 to East Germany. 392/
d. Arriving from Constanta on the SS Transylvania (Rumanian) on 26 October 1953 were 1,100 tires, and on 12 November 1953 on the same ship were 240 cases of tires and tarpaulins. 395/
e. Planned; receipts of 16,353 were received at the end of March 1953. 397/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 18

European Satellite Exports of Motor Vehicle Tires
1946-53

Units

Year	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1946	N.A.			78,809 a/					78,809
	Total	N.A.	N.A.	78,809	N.A.	N.A.	N.A.	N.A.	78,809
1947	East Germany			10,000 b/					10,000
	N.A.			55,000					55,000
	Total	N.A.	N.A.	65,000 a/	N.A.	N.A.	N.A.	N.A.	65,000
1948	Austria			676 c/					676
	East Germany			49,000 d/			4,000 402/		53,000
	Poland			e/					N.A.
	USSR				68,820 f/				68,820
	Total	N.A.	N.A.	49,676	68,820	N.A.	4,000	N.A.	122,496

a. Total year exports, destination not given. 398/
b. Trade agreement. 399/
c. Trade agreement, with USIA (Upravleniye Sovetskogo Imushchestva Austrii -- Administration of Soviet Properties in Austria) in exchange for construction materials. 400/
d. Trade agreement, including 24,000 truck tires. 401/
e. Trade agreement, for 1 July 1948 to 30 June 1949 allowed for 75 million koruny of automobile tires. 403/
f. Listed as Soviet contingent.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 18

European Satellite Exports of Motor Vehicle Tires
1946-53
(Continued)

Units

Year	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1949	Denmark				3,000				3,000
	East Germany			32,801 404/			3,380 405/		36,181
	Finland			a/					
	Mexico			b/					
	Poland			c/					
	USSR			6,900 d/	68,600 e/				75,500
	Total	N.A.	N.A.	39,701	71,600	N.A.	3,380	N.A.	114,681
1950	Ceylon			71 409/					71
	Finland			f/					
	Iraq			312 411/					312
	Lebanon			g/					
	Mexico			h/					
	Venezuela			8,400 414/					8,400
	USSR				5,300 i/				5,300
	Total	N.A.	N.A.	8,783	5,300	N.A.	N.A.	N.A.	14,083

a. 1 metric ton reported. 406/
b. 408 kilograms of tires reported. 407/
c. Trade agreement, for 1 July 1948 to 30 June 1949, allows for 75 koruny of automobile tires. 408/
d. Trade agreement, including 6,500 truck and 400 automobile tires.
e. Listed as Soviet contingent.
f. 60 metric tons reported. 410/
g. 18 metric tons reported. 412/
h. 1 metric ton reported. 413/
i. Listed as occupation costs. 415/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 18

European Satellite Exports of Motor Vehicle Tires
1946-53
(Continued)

Units

Year	Importing Country	Albania	Bulgaria	Czechoslovakia	East Germany	Hungary	Poland	Rumania	Total
1951	China						a/		
	East Germany			2,800 b/					2,800
	USSR				8,638 c/				8,638
	Total	N.A.	N.A.	2,800	8,638	N.A.	N.A.	N.A.	11,438
1952	Albania			2,350 419/					2,350
	East Germany			12,500 420/					12,500
	Turkey		1,498 d/						1,498
	USSR				34,800 c/				34,800
	Total	N.A.	1,498	14,850	34,800	N.A.	N.A.	N.A.	51,148
1953	Albania			4,500 422/				1,340 423/	5,840
	East Germany			2,054					2,054
	Ecuador			e/					
	Egypt					f/			
	Turkey			g/					
	Belgium and Luxemburg			h/					
	Total	N.A.	N.A.	6,554	N.A.	N.A.	N.A.	1,340	7,894

a. 9 tons of tires imported to Gdynia from Antwerp for China. 416/
b. Arrived in October 1951. 417/
c. Listed as occupation costs. 418/
d. Reported 1,498 packages, or 27 metric tons of tires were shipped. 421/
e. $226,000 worth of tires reported during January to June. 424/
f. 226 kilograms of tires reported sent in March 1953. 425/
g. 246 kilograms of tires reported. 426/
h. 54,000 francs of tires reported during January to May. 427/

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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APPENDIX D

STOCKPILING OF RUBBER AND RUBBER PRODUCTS IN THE EUROPEAN SATELLITES

I. Stockpiling of Rubber.

Reports of storage or stockpiling of rubber have been infrequent and as yet do not reflect a decided or large-scale trend toward stockpiling for military use.

Reported storage of rubber in Czechoslovakia, East Germany, and Hungary, 1946-52, is given in Table 19. This table is a compilation of specifically reported stocks, not estimated actual stocks.

Table 19

Reported Stockpiling of Rubber in Czechoslovakia, East Germany, and Hungary
1946-52

Metric Tons

Country	1946	1947	1948	1949	1950	1951	1952
Czechoslovakia		5,957 a/	5,000 a/				
East Germany	6,000 b/			1,907 c/	1,522 d/	1,660 e/	1,261 f/
Hungary		2,497 g/					

a. Natural and synthetic rubber. 428/
b. Synthetic rubber at the end of 1946.
c. Including 707 tons of natural rubber and 1,200 tons of used rubber. The reserve of used rubber was being used constantly and never exceeded 1,200 tons. 429/
d. Including 1,200 tons of used rubber, which was to be depleted by the by the end of 1951, 321 tons of natural rubber, and 1 ton of synthetic rubber. 430/
e. Including 1,400 tons of synthetic rubber and 260 tons of natural rubber. 431/

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Table 19

Reported Stockpiling of Rubber in Czechoslovakia,
East Germany, and Hungary
1946-52
(Continued)

f. Including 1,260 tons of synthetic rubber and 1 ton of natural rubber. 432/
g. Including 2,124 tons of rubber waste, 367 tons of natural rubber, and 6 tons of synthetic rubber.

In addition to the reported stockpiling of rubber described in Table 19, the following scattered information was noted:

A. Czechoslovakia.

The small reserve stocks maintained before World War I were depleted at the end of the war. For additional supply, rubber scrap was collected. 433/

B. East Germany.

An isolated report located a secret depot for natural rubber in or near Eberswalde. 434/ Other reports stated that the natural rubber depot in Fuerstenwalde was dissolved on 28 March 1952 and that in late April 1952, 800 tons of natural rubber from the depot at Finow Mark were to be transferred to the VEB-Deka Reifenwerke at Fuerstenwalde. 435/

A depot was established at the chemical plant in Niederau. On 5 April 1952 a shipment of 100 tons of natural rubber from the USSR arrived in Niederau, increasing the stocks to 280 tons. On 20 May 1952, 318.5 tons of natural rubber were transferred to Niederau from the import depot in Halle/Trotha.

In September 1952 the State Secretariat for Administration of State Reserves (State Reserves) took over the functions of the State Administration for Material Reserves (State Material Reserves). Its task was to stockpile supplies for the East German armed forces and Dienst fuer Deutschland (Service for Germany). On 1 February 1952 the state depot stocks at Halle/Saale had included 9,933 kilograms of natural rubber. 436/ It is planned to have, by the end of 1955, 100

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

tons of natural rubber in year-end stock, 400 tons of natural rubber in the State Reserves, and 2,000 tons of synthetic rubber in year-end stock. 437/

C. Rumania.

In 1949 a stock of natural rubber was requisitioned from private reserves. In 1951 the Caucius Plant in Bucharest had 200 tons of natural rubber and 500 tons of synthetic rubber. 438/

II. Stockpiling of Rubber Products.

Storage of tires and other rubber products has been reported, and some storage warehouses have been located. The location of tire storage warehouses in Czechoslovakia is given in Table 20.*

Scattered information on storage of rubber products in the European Satellites is given below.

A. Czechoslovakia.

One source reported that 90 million koruny worth of rubber tires was stored at central warehouses. These warehouses were located at Prague X, Prague/Krizikova, Stare Strasnice, Nakladov Nadraji, the Rubena Plant at Nachod, the Matador Tire Plant at Puchov, and at the Svit Plant at Gottwaldov. 439/ Another report said that tires and other automotive equipment were stored at Novy Jicin. 440/

B. East Germany.

The central stocks of ATG (Auto-Transport-Gemeinschaft -- Auto-Transport Corporation) in Berlin/Lichtenberg were reported to have 60,000 tires. 441/ In August 1950 the tire depot at Wildau was transferred to Cottbus, which is either the main depot of the former BMAG (Berliner Maschinenbau Aktiengesellschaft -- Berlin Machine-Building Enterprise) Factory or the depot for motor vehicle spare parts at the former Schwartzkopf Plant. 442/ In the northern section of the storage area in Eichholzer Wald (near Finsterwalde), 6 buildings, each 200 by 42 meters, were used to store rubber products. 443/

On 1 February 1952 the State Material Reserves at Halle/Saale had an available stock of 350 tires. 444/ In October 1952 a fire at the warehouse of VEB-Deka Riefenwerke in Fuerstenwalde destroyed the

* Table 20 follows on p. 84.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 20

Tire Storage Warehouses in Czechoslovakia 445/

Type a/*	Region	City	Location	Comments	Floor Space (Square Meters)	Number of Workers	Contents
Central	Prague	Prague	Stare Strasnice Railroad Freight Station, third floor b/		6,000 to 7,000	9	Approximately 30 percent of all tires distributed in Czechoslovakia were handled here. Tires came mainly from Mitas Plant in Prague.
Regional	Prague	Prague	76 Krizikova ul. underground 2-story garage		3,000 to 3,500	11	All sizes of tires.
Subregional	Prague	Prague	16 Stefanikova ul.		200	4	Passenger car and medium-sized truck tires.
Subregional	Prague	Prague	2 Reznicka ul.		150 to 200	4	Tractor tires.
Subregional	Prague	Prague	9-12 Italska ul.		500	4	All sizes of tires except tractor.
Subregional	Prague	Benesov					Same size of tires.
Subregional	Prague	Mlada Boleslav					Small-sized tires.
Central		Nachod	Rubena Plant				
Central		Puchov	Matador Tire Factory Gottwaldov, fourth floor			6	
Regional	Brno	Brno	7 Havelska, ground floor			2	All sizes of tires.

* Footnotes for Table 20 follow on p. 86.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 20

Tire Storage Warehouses in Czechoslovakia 445/
(Continued)

Type a/	Region	City	Location	Comments	Floor Space (Square Meters)	Number of Workers	Contents
Regional	Ostrava	Paskov			2,000 to 2,500	7 to 8	All sizes of tires.
Regional	Liberec	Liberec	15 Barvirske ul.		400	5	
Regional	Jihlava	Havlickuv Brod	Railroad station	Planned to move	600	2	
Regional	Pilsen	Pilsen		Planned to move	500	Several	
Regional	Karlovy Vary	Karlovy Vary	Outskirts	To be transferred to Bohatice			
Regional	Gottwaldov	Napajedla		To be moved, probably to Gottwaldov			
Regional	Zilina	Zilina		Administration for all storage warehouses in area	150	2, 5 staff	
Regional	Kosice	Kosice	6 Namesti Republicky	Also served Preshov	150	2	
Regional	Pardubice	Pardubice	4 Hlavni Trida ul.	Also administrative office	400	2 to 3, 5 staff	
Regional	Bratislava	Bratislava	5 Battova ul.	Also served Nitra region			
Regional	Usti nad Labem	Teplice-Sanov		To be transferred to Krasne Prezno (suburb) by 1 September 1952			
Regional	Banska Bystrica			Planned location at Ulanka			
Regional	Hradec Kralove	Hradec Kralove	Stalinova ul.	To be transferred to Slezske Predmesti (suburb)			

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Table 20

Tire Storage Warehouses in Czechoslovakia 445/
(Continued)

Type a/	Region	City	Location	Comments	Floor Space (Square Meters)	Number of Workers	Contents
Regional	Olomouc	Olomouc	36 Walkerova ul.			5	
Regional	Ceske Budejovice			Temporary	300 to 400	3	
Regional	Nitra			Used Bratislava region			
Regional	Preshov			Used Kosice region			

a. Tire storage warehouses were maintained by the Ministry of Chemical Industry. In August 1952 there were four central warehouses. These central warehouses supplied regional warehouses, which were located in most of the regions in Czechoslovakia. The regional warehouses, in turn, supplied consumers in their regions. In the Prague region, there were five subregional warehouses that helped the regional warehouses distribute tires. Approximately two-thirds of the tire production of Czechoslovakia was put into storage.
b. Headquarters were located at 76 Krizikova ul., where there was an administration staff of 30 workers, which supervised the central, regional, and subregional warehouses in the Prague area.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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entire yearly production of automobile tires, valued at 20 million DME, which belonged to the State Reserves. 446/

Documentary statistics of tire stocks in East Germany, given as year-end stocks and operational reserves, are as follows:

	1950 447/	1951 448/	1952 449/	1955 Plan 450/
Year-End Stocks	23.4	44.1	39.1	20
Operational Reserves	30.0*	73.4	70.0	60
Total Tire Stocks	53.4	117.5	109.1	80

Although no estimate of stockpiling of tires is possible at this time, the following fragments of information may be of value.

One report stated that 10 percent of the production of tires, particularly truck tires and nonskid tires, are requisitioned for State Reserves and government contracts. In the first quarter of 1953 the DHZ (Deutsche Handelszentrale -- German Trade Administration) stated that its warehouses stored 50,000 tires, mainly automobile tires, which equaled one-third of the total available stock. In spite of this stock it is reported that 25,000 truck tires are imported annually from the USSR. This stock is stored in DHZ warehouses, with the principal depot located at Halle. 451/

C. Poland.

An isolated report mentioned a warehouse, Skaadnica Towarowa, in Warsaw. It is not known whether this warehouse stores for central distribution or for stocks. 452/

* Planned figure.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX E

PLANT STUDIES

The scarcity of reliable information about individual plants engaged in the production of rubber and rubber products in the European Satellites makes a formal, detailed plant study impossible. The fragmentary information which is available, however, is of considerable value and is therefore presented in this appendix.

I. Synthetic Rubber Plants.

A. Bulgaria.

Actual production of synthetic rubber in Bulgaria is a negligible factor in the total production by the European Satellites. There is no evidence that Bulgarian production in 1953 was sufficiently large to alter total Satellite production figures by more than a few tons. Experimental work, however, has been and is being done in Bulgaria, and the country must be regarded as a potential producer.

In 1942 the Chavdar Rubber Factory was established at Sveti Vrach as an experimental plant for the production of buna-type synthetic rubber. 453/ Apparently the experimental work was successful, for subsequently a credit of 6 million leva was granted by the Bulgarian government for enlarging the plant to permit an output of from 300 to 400 tons per year. 454/ There is no evidence to indicate that such production has been attained to date.

B. Czechoslovakia.

The only plant definitely known to be producing considerable quantities of synthetic rubber in Czechoslovakia is the Svit Plant (formerly Bata Plant) at Otrokovice, a suburb of Gottwaldov (formerly Zlin). 455/ This plant is credited with the major part of the estimated total of 1,700 tons of synthetic rubber produced by Czechoslovakia in 1953. 456/ In all probability the synthetic rubber produced by the Svit Plant is neoprene rubber, although there are some reports of small-quantity production of the soloprene and buna types. 457/ A major part of the rubber output of the Svit Plant is used in the manufacture of rubber footwear and vehicle tires. 458/

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There are a number of unconfirmed, and often conflicting, reports of synthetic rubber experimentation and small-scale production in other plants in the Gottwaldov area. 459/ There is also an unconfirmed report that substantial quantities of buna-type rubber have been produced by the Vulkan Rubber Works in the vicinity of Teschin. 460/

C. East Germany.

The entire estimated 1953 production of 62,000 tons of synthetic rubber in East Germany is credited to Bunawerke, near Schkopau. 461/ It is reported that from 3,000 to 4,000 workers are employed there in the manufacture of buna-type rubber, primarily buna S and buna S-3. 462/ It is also reported that in 1952 there was some small-scale production of cold rubber. 463/

A relatively small part of the production of Bunawerke is utilized by VEB Electrochemical Works, Ammendorf (formerly Buchau Chemical Factory), near Halle, in the production of chlorinated rubber, which is used primarily in the manufacture of special veneers. 464/ It is reported that in 1952 about 120 tons of this special-purpose rubber product was manufactured. 465/ There is no evidence to indicate that the Ammendorf plant is an actual producer of synthetic rubber.

D. Hungary.

There seems to be little rubber production in Hungary at the present time. In Budateteny there is a small experimental plant for the production of synthetic rubber. 466/ A plant at Petfuerdo, the largest chemical plant in Hungary before World War II, was completely destroyed in 1944. In 1951 it was fully rebuilt and divided into 20 sections, one of which was to be for the production of synthetic rubber. 467/

The First Hungarian Chemical Works, located in Rakoskeresztur, is the only plant which was planned for the production of synthetic rubber. In 1941 the Germans began construction on a plant for the manufacture of buna N and buna S rubber, but by 1944 the plant was not completed to a point where it was able to produce the finished product. The Hungarian government took over the plant, which had not been seriously damaged by the war, and tried to run it from 1944 to 1946, manufacturing some of the intermediate chemicals. 468/ It has since been reported that the plant was converted to the production of dyestuffs. 469/ Available information does not indicate any commercial production of synthetic rubber at this plant.

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E. Poland.

The only synthetic rubber plant in Poland is the Debica India Rubber Manufacturing Plant, located in Debica. 470/ Before World War II there was a plant in Debica, listed under the I.G. Farben establishments, which was used in the production of polybutadiene rubber. German information stated that the plant was for the production of artificial rubber of spirit base, a product called "Ker." A minimum of 1.5 percent Ker is required for processing India rubber. 471/ In 1939 a plant was mobilized in Debica for the production of butadiene synthetic rubber under the application of sodium polymerization. The production capacity at this plant was about 300 metric tons. 472/ There is no indication of the relationship between the plant formerly under the I.G. Farben establishments and the Debica India Rubber Manufacturing Plant.

Included in plans for 1948 were funds of 39 million zlotys to be used for the construction of a synthetic rubber plant in Debica, the area of which includes about 3 buildings and 6 alcohol tanks. 473/ According to Rocznik Przemyslu Odrodzonej Polski (Industrial Yearbook of the Reborn Poland), 1948, there was a chemical plant in Debica producing synthetic rubber based on Polish patents. Another source states that artificial rubber production has been in progress during the last 2 years at Pustynia, near Debica. 474/

Because present production of synthetic rubber is small and centered in Debica, the Polish government has decided to erect a large synthetic rubber production center in the strategically defended area between the Vistula and Warta Rivers. A delegation of engineers is going to Schkopau, Germany, with orders to investigate the possibility of adapting modern German methods of production in Poland. 475/

The Dwory Synthetic Products Works, located in Oswiecim (formerly Auschwitz) has not, as yet, produced any synthetic rubber. 476/ This plant, also formerly an I.G. Farben plant, was built for the manufacture of buna rubber of all types. It was enlarged from 1941 to 1943 in order to reach the planned production capacity of 36,000 tons per year. 477/ According to Allied observers, the plant was not in operation at the end of World War II. 478/ The Russians completely dismantled the plant in 1945. 479/ Since 1948, construction work on rebuilding the plant has been reported. There are conflicting reports about production at this plant. One report states that the first samples of synthetic rubber produced by the plant appeared in 1950.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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This synthetic rubber was produced from oil imported from the USSR. 480/ Later reports indicate that the plant was still under construction in late 1952. 481/ Yet another report stated that with Soviet supplies of equipment, the plant was expected to go into operation about mid-1953. 482/ Although plans are still being made for the production of rubber, it is doubtful that any synthetic rubber has yet been obtained from this plant.

Shortly before the beginning of World War II, the Lower Silesian Chemical Works, located at Zarow (formerly Saaru), was built for the production of thiokol rubber. It was reported that in 1940, 700 tons were produced and that 1,432 tons had been produced between 30 June 1940 and 1 July 1942. 483/ The Polish government took over the plant and nationlized it by mid-1946. The plant was reported out of operation in April 1947, and also in February 1948, because it was impossible to obtain ethylenedichloride, an important chemical component, in any Satellite area. 484/ An inadequate supply of ethyl bromide held up the production of thiokol latex at the plant in June 1948. 485/

The Lower Silesian Chemical Works is presently in process of reconstruction. Production at the plant includes thiokol A, synthetic vulcanized rubber, used for the production of rubber pipes and various types of washers. Present production is reported at a rate of about 12,000 tons per year and is used mainly in the electrotechnical industry and for the Polish Aviation Works. 486/ Although thiokol rubber is undoubtedly being obtained from this plant, it appears doubtful, in view of the limited use of this specialized type of rubber, that production is anywhere near 12,000 tons per year.

F. Rumania.

There is no definite evidence of actual production of synthetic rubber in Rumania. It was planned to produce 2,000 kilograms of synthetic rubber per month at a plant attached to the Columbia Oil Refinery in Ploesti. 487/

Although various areas, such as Moreni, Medias, and Margina, have been reported as producing synthetic rubber, the available information on these alleged plants does not confirm such production.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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II. Natural Rubber Plants.

A. Czechoslovakia.

No production of natural rubber is reported in Czechoslovakia.

B. Poland.

It was reported that 650 tons of kok-saghyz roots from shrubs grown in Czechoslovakia were shipped to Polish plants which produced approximately 56 tons of crude rubber. 488/ The locations of these processing plants in Poland are not known.

C. Hungary.

It was reported that three experimental stations had been formed for cultivation of kok-saghyz at Szeged, Debrecen, and Mezohegyes. 489/ There is no evidence supporting this statement.

D. Rumania.

There is one rubber plant in Rumania, located in Arad. It is a kok-saghyz processing plant which was installed in the former Flour Mill Nuemann. New equipment was installed about 1943. The amount of rubber, processed from kok-saghyz, produced at this plant is unknown. 490/

III. Reclaimed Rubber Plants.

A. Bulgaria.

There are two plants which reprocess rubber in Bulgaria. The first is the Georgi Dimitrov State Rubber Plant (formerly Bakish), located in Voenna Rampa, a suburb of Sofia. 491/ It has been reported that some 300 to 400 kilograms of reclaimed rubber were produced at this plant. The plant has complete equipment for rubber reclamation, including replastification. 492/ It is not clear whether this equipment was among that received from the UK in 1950. Previous information had stated that there definitely was no reclaiming of rubber done at Bakish before that date. 493/ One report states that some departments at the Georgi Dimitrov State Rubber Plant are letting rubber waste products, which could be exploited advantageously, go to waste. 494/

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The second plant is the Moskva Rubber Reclamation Plant, located in Pazardzik. Reportedly it has 250 employees. 495/ The main activity of the plant is the reprocessing of used rubber and rubber shavings, part of which is shipped to other factories. 496/ Workers also overhaul and repair old rubber shoes and rubber items, with the exception of tires of cars, motorcycles, and bicycles. 497/

New machinery for the production of rubber was made at the Metalik Machine Building Cooperation in Pazardzhik and delivered to the Moskva Rubber Reclamation Plant. These machines will mechanize the whole process of cutting, trimming, and crumbling of rubber, thus displacing the manual labor of 24 workers. 498/

B. Czechoslovakia.

In Czechoslovakia there are three plants listed as plants for the reclamation of rubber. For the first of these, the Matador Plant, which is located in Bratislava, there insufficient evidence to substantiate the production of reclaimed rubber.

The second of these plants, the Rubena Branch Plant, is located in Hradec Kralove. One report states that there are 600 workers employed at the plant, and another states that there are 170 men, working in 3 shifts, at the main workshops. 499/ The original buildings for the plant were constructed in the early 1930's. In 1948 and 1949 they were expanded and several new buildings were added. 500/ Most of the work done in the regeneration section, which contains a tearing machine, an oven, and the like, consists of tearing and cutting tires and rubber hoses. 501/

Waste rubber from the main Rubena Plant in Nachod is sent to this rubber-reclaiming plant in Hradec Kralove. 502/

The third rubber-reclaiming plant in Czechoslovakia, the Svit Plant in Gottwaldov, has been modernized several times and, in 1948, a considerable amount of new construction was added. This reclaiming unit is the only one of its kind in Czechoslovakia and is built to produce sufficient reclaimed rubber for all rubber plants in Czechoslovakia. 503/ Scrap rubber from old tires is reclaimed here, as well as the waste from the synthetic rubber plant in Otrokovice. 504/

Rubber products, at least those found on the home markets, are of very poor quality, because of the high percentage of fillings in reclaimed rubber. 505/

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C. East Germany.

There are six plants presently reclaiming rubber in East Germany. Three of these plants -- the Thuringia Tube and Rubber Plant, the Gitanie Rubber Plant, and the Bloedner and Vierschrodt Plant -- are reclaiming rubber only for their own use. 506/

The first plant, the Thuringia Tube and Rubber Plant, is located in Walterhausen. The plan for 1951 included 330 tons of reclaimed rubber to be produced at this plant. 507/

The Gitanie Rubber Plant is located in Hoerselgau, near Gotha. There are 620 employees working in three 8-hour shifts per day, 5 days per week. 508/ The production plan for 1951 included 600 tons of reclaimed rubber to be produced at this plant. 509/

The Bloedner and Vierschrodt Plant, also known as the Rezinatechnika Rubber Plant, is located in Gotha. According to plan data for 1951 this plant was expected to produce 540 tons of reclaimed rubber. 510/ In 1953 it was planned to begin construction of a new rubber reclamation plant which is to be attached to the existing facilities at Gotha, thus increasing production at the plant. 511/

The fourth plant, Gummiwerke Elbe, located in Klein-Wittenberg, adjoins the Piesteritz Stickstoffwerke. 512/ There are 2,000 workers employed at the plant, but no information is available as to how many of these workers are in the regeneration section. 513/ Production at the plant presently consists of reclaiming scrap rubber. The process, however, is too expensive, and only certain types of rubber and buna can be reclaimed. Therefore, the laboratory formerly used for silicone rubber research is now being enlarged and converted for new experiments, the purpose of which will be to discover means of perfecting the reclaiming process for scrap rubber. 514/

In Meuselwitz there is another rubber reclamation plant, Heimer Pils and Sons, employing 250 workers and producing about 180 tons per year. 515/ It is planned that this plant will be expanded to supply raw materials for other East German rubber plants. 516/

The East German production plan for 1951 also listed a plant in Schoenebeck with a planned production of 650 tons per year. 517/ This enterprise, which produces technical rubber goods, was placed in trusteeship at the beginning of 1953 because of financial difficulties. 518/ It is believed that this plant is the same as, or connected with, the plant in Meuselwitz. 519/

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The Kautas Rubber Plant, located in Zipsendorf, near Meuselwitz, for the most part produces reclaimed rubber for other plants in East Germany. 520/ Although the plant specializes in the reclamation of old rubber and the manufacture of shock mountings for vehicles and marine motors, it also produces rubber soles and heels for the shoe industry and tires for perambulators. 521/ The yearly production of reclaimed rubber is reported as 240 tons. 522/ Another report states that the planned production for 1951 was 1,650 tons of reclaimed rubber. 523/ By reducing the refining process to a maximum of 4 processes, however, the production can be increased, and, because of this, actual production in 1951 was reported to have been 2,000 tons. The only existing difficulty is connected with grinding disks for the "condux" mills. 524/

D. Hungary.

The only plant in Hungary which reclaims rubber is the Magyar Ruggyantagyar (Hungarian Rubber Plant, Inc.), located in Budapest. Tire production is the main activity of this plant, but, because of Soviet technical aid, rubber is also reclaimed here. Soviet technical literature and Soviet experts visiting Hungary called attention to the fact that in some plants waste materials used as raw materials have been incorrectly used. Because of this misuse, high-quality finished products could not be manufactured, but as a result of Soviet instructions, the workers have undertaken the processing of 5 carloads of previously unused crude rubber mixtures, the value of which exceeds 750,000 forints. 525/ In order to obtain new goods the plant management insisted on getting scrap rubber in exchange. This was stored in the open. There was finally enough to fill hundreds of railroad freight cars. All this is now being used. 526/ Tire scrap turned in by those wishing new tires is melted down and used for the manufacture of new tires by mixing it with crude rubber. 527/

E. Poland.

There are four plants in Poland for the reclaiming of rubber. One of these, the Reclaim Rubber Plant in Kolo, is only mentioned in a postwar economic plan. No other definite information is given.

The largest plant for rubber reclamation is the Rubber Industry Plant No. 2 in Bolechow. This plant, built as a May Day pledge by the workers of the State Rubber Industry Plant No. 2 in Poznan, was the first of its kind in Poland. 528/ It started production on 1 May 1950, and it was among the plants listed as achieving particularly good results during the third quarter of 1952. 529/

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Regenerating rubber is the main activity of the plant. Waste materials such as old tires and rubber boots, which were not being used, will be turned into valuable raw material. The opening of this factory meant a yearly saving of 1,000 tons of rubber. 530/ Because of a lack of sufficient quantities of new tires, retreaded tires are being sold by the Central Equipment Office for Motor Vehicles of Morozbyt. The retreading work is being carried out by the Rubber Industry Plant No. 2 in Bolechow. 531/

Two other plants in Poland, the Krakow Rubber Plant in Krakow and the "Gentleman" State Rubber Industry Plant in Lodz, also reclaim rubber. In 1949, a large plant for the reclaiming of rubber was built near Krakow. It was equipped with modern machinery for complete reclaiming and replastification and was to serve the whole of Poland. It was scheduled to produce approximately 1,050 tons per year, but even this factory will not suffice to reclaim the huge quantities of old rubber stored in Poland. 532/

The plant in Lodz has no real facilities for the reclamation of rubber. It has its own sorting and milling machinery (refiner), but lacks the autoclaves. The rubber mass is simply boiled at 5 or 6 atmospheres, and the resulting material can be used only in very small quantities. 533/

IV. Tire Plants.

A. Albania.

There are no tire-manufacturing plants reported in Albania.

B. Bulgaria.

The only plant producing tires in Bulgaria is the Georgi Dimitrov State Rubber Plant (formerly Bakish), located in Voenna Ramp, a suburb of Sofia. 534/ This plant also reclaims rubber. (See C, 1, above.) In 1949 there were 448 workers, operating three 8-hour shifts on a 6-day week. The plant may work as many as 350 days per year. 535/ During the busy season, employment rose to about 730 workers, and the plant operated 24 hours per day. 536/

Production at the plant before and during World War II consisted of tires for automobiles, bicycles, trucks, and airplanes, as well as rubber shoes for civilians and special ones for the army, rubber boots,

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

boats, balloons, and gas masks. 537/ Since 23 December 1948, when the plant was nationalized, it has concentrated on production of tires. 538/ Approximate daily production in 1950 was 150 bicycle tires and 150 inner tubes and automobile tires. 539/ During the first 6 months of 1952, 6 training courses were instituted at the Georgi Dimitrov State Rubber Plant for the production of better quality rubber and rubber products and for better organization of operations. 540/

Before World War II, raw materials were imported as follows: smoked sheets from the Far East via the USSR, synthetic and reclaimed rubber from the USSR, cord cotton from Egypt, accelerators from the USSR, zinc oxide from Poland, sulfur from Italy, and soot from the US. 541/ Following the inclusion of Bulgaria in the Soviet orbit, the Georgi Dimitrov State Rubber Plant was forced to obtain zinc oxide and barium sulfate from local Bulgarian sources, sulfur from the USSR, and soot from Sweden. 542/ Cotton cord had to be produced from raw Egyptian cotton by the Fortuna Textile Mill, which is located near the plant. 543/ Carbon blacks, necessary for rubber production, came from Germany, the US, and the USSR. During World War II, however, all carbon blacks came from Germany. 544/ Crude rubber, also used as a raw material, was imported from Germany. 545/

All machinery at the plant can be classed as new machinery, and it is well maintained. 546/ That machinery which dates from 1930 to 1938 was made by H. Bersdorf in Hanover, Germany, and that dating from 1950 -- two Francis Shaw presses -- was imported from the UK. As mentioned previously, the plant has a complete set of equipment for rubber reclamation, including replastification, but no facilities or equipment, at present, for production of any rubber goods except tires and footwear. 547/

No rubber products from this plant were exported, and very few were imported. All tires available in Bulgaria, including those for the army, were produced at this plant. Only a small number of tires of special sizes had to be imported. 548/

C. Czechoslovakia.

There are five plants reportedly producing tires in Czechoslovakia. The first of these, the Matador Plant in Bratislava, is probably no longer manufacturing tires. One source stated that no rubber tires had been produced at this plant since 1948 but that they were being produced in a branch plant in Puchov. 549/ The Matador Firm con-

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

structed a second plant in Puchov before World War II and took much of its equipment from the Bratislava plant to the new installation. 550/ Under German occupation the Bratislava plant produced mainly rubber hoses and pneumatic tires, and in 1948 the automobile pneumatic department was transferred to Puchov, thus stopping production of automobile tires. 551/ After 1950, 12 presses for bicycle tires, installed in the plant, had to be shipped to an unidentified plant in Puchov. 552/ Present production includes rubber for tank tracks and air force needs. 553/

In Nachod there is the Rubena Plant, which produces 25 percent of all truck and automobile tires produced in Czechoslovakia. 554/ The firm, which now employs 500 workers in 3 shifts per day, existed before 1914 as a small establishment and was greatly expanded in 1921-38. 555/ One building was added during World War II, and about eight sections were built or rebuilt between 1947 and 1950. After the war the plant produced mainly truck tires for the Tatra Works in Prague, and some bicycle tires. It also produced rubber soles and heels, technical goods, and tubes, and in 1949 the production of rubberized garments was begun. 556/ Since 1949 the plant has secretly manufactured rubber gas tanks for aircraft and rubber recoil pads for machine guns. The gas tanks are 1.5 meters long, hold 600 liters of gas, and are self-sealing. 557/ It is believed that rubber fittings and tires both for the IL-10 and the MIG-15 may be manufactured at the Rubena Plant. 558/ Present production, however, consists mainly of tires, rubber tubes, and rubber bicycle accessories.

Because of a prevailing shortage of raw materials, mainly raw rubber, primarily scrap rubber is used in this production of tires. 559/ Before World War II soot was received from the US and Poland. 560/ Poland also supplied the plant with synthetic rubber. 561/ During and after the war, raw materials were imported as follows: sulfur from Italy; soot from Czechoslovakia, East Germany, Poland, and Switzerland; and zinc oxide from Poland. Synthetic rubber was brought from buna rubber plants in Hradec Kralove and Pardubice. Bottlenecks in production are continuously caused by shortages of rubber, of three or four different oils, and of high-quality carbon blacks. 562/

Until the inclusion of Czechoslovakia in the Soviet orbit, the USSR received 60 to 75 percent of all production from the Rubena Plant; 20 to 30 percent went for export, and only 5 percent for home consumption. 563/ Automobile and bicycle tires, besides being consumed on the home market, went to Germany, the Netherlands, and the USSR. 564/ It

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

is reported that at present 90 percent of truck and automobile tire production goes to the USSR. 565/

Mitas, the second largest rubber plant in Czechoslovakia, producing 15 percent of all Czechoslovak truck and automobile tires, is located in Zabehlice, a section of Prague. 566/ In the fall of 1950 there were 2,000 workers employed there. 567/ This plant, formerly a branch of the French plant, Pneu Michelin, was nationalized in 1946 and is presently a branch of the Rubena Rubber Plant. 568/ Following World War II it was continuously expanded and produced predominantly tires for military vehicles. This was the only plant in Czechoslovakia which produced tires of US dimensions. 569/

In early 1949, construction on an additional plant building was begun at Mitas. This was the largest of its type in Czechoslovakia. 570/ The new building started operating in July 1949, but sabotage was committed at the plant immediately after the official opening, and the building was destroyed. In July 1949, however, repairs were started, and foundations for two additional buildings were laid. 571/ Only tires are produced at this new section of the Mitas plant. Some of these tires are for UNRRA US trucks, and some are types for use in the tropics. 572/

Pure rubber and sulfur are in short supply at Mitas. 573/ The plant uses Soviet cotton, which is worked in mills in Hronov, Cerveny Kostelec, Litvinov, and Zabehlice. Spinning is one of the operations of the plant in Zabehlice. 574/

Products which could not be used by the Czechoslovak Army were exported to Poland, Hungary, and the USSR. 575/ Part of the tires produced are presently exported to the USSR as payment for raw materials supplied to the plant. 576/

In 1947, the Matador Firm started construction of a new tire factory, the Matador Branch Plant, in Puchov. Some equipment came from the US, and much was produced by the Svit Plant in Gottwaldov. The plant appeared to be complete and producing in November 1949. 577/ It is envisaged that by means of this new plant, production of rubber will be stepped up to such a degree that Czechoslovakia will be able not only to cover its internal requirements but also to become an exporter of rubber articles to other Eastern European countries. 578/ It is planned to increase production of rubber tires by 64 percent by 1953 compared with 1948. 579/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

The plant is reported by one source, an actual observer, to be very modern and to be producing tires for passenger cars, as well as rubber technical equipment such as tubing and rubber gloves. The source also reported that in 1952 the plant had been and would be further expanded and that it had a very modern 4-story warehouse.

The fifth tire plant in Czechoslovakia, employing about 30,000 workers, is the Svit Plant in Gottwaldov. 580/ This plant also reclaims rubber. (See C, 2, above.) Construction of this plant was begun in 1930, and since then new buildings constantly have been added. The Firm was known as Bata until 1948, when with nationalization it was renamed Svit. During World War II, some buildings were slightly damaged, but since the end of hostilities all the damage has been repaired, and four additional buildings were completed in 1950. Although present production at the Svit Plant is concentrated on tires and the reclaiming of rubber, such products as the following are still, or have been, produced: rubber boots and overshoes for civilians and the armed forces; shoes; pneumatic tires for aircraft, automobiles, trucks, motorcycles, bicycles, and farm tractors; special tires for warehouse tractors and lighting equipment; tires for wheelbarrows; fabric for pneumatic tires, inner tubes, rubber toys, soles and heels, rubber-composition linoleum, and miscellaneous automotive rubber parts; and rubberized pulley belts for automotive engines, electric motors, and machines. 581/ After 1945 the production of tires was modernized and perfected, and as a result, present output is much higher than the earlier estimated 50,000 tires per month. 582/ The space between the existing four workshops has been roofed over and turned into work sheds. In addition, a new large workshop has been built, resulting in a very large increase in production. Output of tires is now approximately 42,000 per week. 583/

On Soviet instructions, the manufacture of all rubber products in the Satellites is to be concentrated in Czechoslovakia. A new Svit plant is to be built in Gottwaldov for the production of tires. It will take about 7 years to build. There is no indication as to when construction was begun or will begin. 584/

Production in tire manufacture shops dropped to 30 percent of normal capacity during August-September 1950 because of a shortage of raw rubber. Material began to arrive in October 1950, and production reached 80 percent of normal capacity. 585/ At present, production figures show a decrease because of a lack of raw materials and foreign currency. 586/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Long negotiations with the Russians for buna were met by the Soviet reply that no more buna would be delivered until Gottwaldov fulfilled a previously placed order for 2.5 million pairs of shoes. 587/ Before the inclusion of Czechoslovakia in the Soviet Bloc, raw rubber came from Java, Malaya, Batavia, and a small quantity from the USSR. Today, reclaimed rubber is imported from East Germany. 588/ The entire production of cotton textiles, used as inlays for automobile tires and rubber boots, is produced by the Veseli Plant of the Buchlovan Firm and is delivered to the Svit Plant in Gottwaldov. 589/

Before World War II, Czechoslovakia exported the largest number of rubber goods to the Benelux countries, Sweden, the UK, and Hungary. Tires and tubes were the main articles exported to the USSR, Switzerland, and Germany. Rubber hose and driving belts were chiefly exported to the Benelux countries, Austria, Germany, Sweden, Yugoslavia, and the USSR. 590/ At present the Svit Plant produces tires for fighter aircraft, military jeeps, armored cars, and lorries -- all for the Soviet army. "Barum" tires are also produced in great numbers for Soviet civilian automobiles. 591/ Twenty-five percent of the tire production is for home consumption, and 75 percent is exported, mainly to the USSR and the Satellites. 592/

D. East Germany.

In East Germany there are five rubber plants producing tires. The Mueller Gummiwerke, a privately owned plant employing some 800 workers, is located in Berlin/Schmoechwitz. 593/ Tires produced at this plant are of high quality, as the management stresses quality before quantity. 594/ In spite of this, production for 1951 was 100,000 tires, and production reached 110,000 tires in 1952. 595/ The plant produces tires and tubes for automobiles, trucks, tractors, and bulldozers. It also produces solid rubber tires for wheels between 10 and 30 centimeters in diameter. These treads, believed to be for bogey wheels for tanks, are subjected to very thorough testing. During 1952, 5,000 of these items were produced. 596/ Also in 1952, 70,000 tires for civilian use were recapped at the plant. 597/

The second rubber tire plant in East Germany is VEB-Deka Reifenwerke, located in Ketschendorf. No exact estimate has been made as to the number of workers employed at the plant. During World War II, VEB-Deka Reifenwerke was seriously damaged. In the summer of 1945 it was entirely dismantled. Reconstruction began in October 1946

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

with new machinery from the British Zone of Germany, and in February 1947 the tire plant again began production. 598/ As of December 1950, the plant had reached about 50 percent of its prewar capacity. It presently produces all sizes of bicycle, motorcycle, and passenger car tires, as well as various sizes of truck tires. 599/

According to the Five Year Plan in East Germany (1951-55), production capacity of VEB-Deka Reifenwerke is to be increased to 620,000 automobile tires per year. Production at the beginning of 1951 was very unfavorable and, because the necessary steel bronze wire could not be obtained, planned production for that year could not be reached. 600/ In July 1952, there was another drop in production, resulting from a temporary closing of the plant for repairs and maintenance of equipment. 601/

VEB-Deka Reifenwerke receives rubber from Burma in the amount of 50 tons per month. 602/ All tires are made from buna rubber only. 603/ The greatest bottleneck in the production of tires seems to be a lack of wire for support of automobile tires. 604/

Reparations consume 92 percent of production at this plant, and civilian needs, 8 percent. 605/ Most tires produced at Ketschendorf are shipped to Halle-Trotha for transshipment to the USSR via Stettin. 606/

VEB-Gummiwerk Elbe, located in Klein-Wittenberg and employing some 2,000 workers, is the third tire plant in East Germany. 607/ It manufactures a small number of tires, the greater part of which is bicycle and large balloon tires. This plant also reclaims rubber. 608/ (See C, 3, above.)

There is a fourth tire factory, VEB-Gummiwerk Poetsch und Franz, in Heidenau. The plant, formerly producing small rubber wares, was converted to the production of automobile tires and tubes. After its expropriation it became a provincial enterprise of the Saxony Rubber Works and was assigned to VVB(L) Chemical Products with the plant number 57/392/1001. The present program at the Heidenau plant includes production of automobile tires and tubes, technical form cylinders, washer bases, and rubber soles and heels. 609/

The production plan for the plant in Heidenau for 1952 was 43,000 tires. 610/ During the first 5 months, however, 25,383 tires were produced, and thus the planned number was exceeded. 611/ It is

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

reported that in December 1952 the plant was producing 1,000 tires per day. 612/ One report states that by the end of 1952 the Heidenau plant was to cease production of automobile tires and begin production of bicycle tires exclusively. 613/ Most of the production from this plant goes to Soviet units and agencies. 614/

VEB-Gummiwerk Riesa is the fifth tire factory in East Germany. It is located in Riesa and employs 1,200 to 1,800 workers. 615/ Production of tires at this plant increased from 17,755 in 1948 to 235,260 in 1953. 616/ This number includes automobile, motorcycle, and truck tires. It was also reported that the Riesa plant was to start production of aircraft tires on 1 April 1953. Twenty molds for these tires had been received by the plant, but as yet there is no information of aircraft tire production. 617/

The factory receives the following material shipments: synthetic rubber from the buna plant in Schkopau, crude rubber from the Netherlands, steel wire from the USSR and Czechoslovakia, and cord cones from the Carlton Mill in Leipzig. 618/ The plant in Riesa, however, is still short of cord. Formerly, 14 layers of cord were used in passenger car tires. This has now been reduced to 6 to 7 layers. 619/ Two new laboratories for the examination of all raw and ancillary material have been completed in Riesa, and the factory is presently developing a new rayon-thread-impregnating solution with a view to improving the quality of tires. 620/ A serious bottleneck to production is the lack of softeners, vulcanization accelerators, collophony, and soot. Most of these are obtained through East-West trade, and the amount lacking varies with the extent of the East-West trade controls at a given time. 621/

Soviet army installations receive the bulk of production from this plant -- more than 50 percent. The remainder goes to other Satellite countries, the ATC, and the DHZ. 622/

E. Hungary.

Tire production in Hungary is concentrated in one plant, located in Budapest -- the Magyar Ruggyantagyar (Hungarian Rubber Plant, Inc.). This plant also reclaims rubber. (See C, 4, above.) In 1952 there were 3,000 workers employed there. 623/

This plant was constructed before World War I by Dunlop Shares Holders Company and nationalized in November 1948. 624/ The last

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

official production figures of the Hungarian Rubber Plant, Inc., which were released in July 1947, showed monthly production to be 3,000 tires and tubes for automobiles and 1,000 tires and tubes for trucks. It is reported, however, that during 1949 a total of 6,000 tires per month was set as target output and that this target was reached and maintained. 625/

About 70 percent of the plant's production consists of tires and tubes of the following types: large-dimension tractor tires, tires and tubes for military trucks, and tires and tubes for automobiles. 626/ The following articles, however, are also produced: rubber facing, rubber boots, rubber cushions, rubber gloves, hard rubber wares, rubber pipe fittings, rubber toys, rubber soles and heels for shoes, and rubber materials for oil-producing plants. 627/

Between April 1948 and April 1952, a lack of raw materials caused a complete work stoppage on an average of 2 to 3 days per month in the tire production sections. 628/ Before the inclusion of Hungary in the Soviet orbit, carbon blacks were imported from the US and the UK. 629/ There is no information as to the place from which they now come. It is reported that some natural rubber still comes from British colonies and that the rest is obtained from the USSR. The most important raw material was buna rubber made in East Germany. This supply of buna rubber was somewhat irregular. Crepe, another basic rubber material, was, and still is, very scarce. 630/

An important portion, 40 percent, of the rubber production of the Hungarian Rubber Plant, Inc., goes to the USSR. In the domestic fields, 30 percent goes to truck and automobile manufacturers, Csepel Automobile Plant being the biggest customer. Bulgaria also receives some production, and the remainder goes to commercial outlets for retail trade within Hungary. 631/

F. Poland.

There are to be 3 tire plants in Poland, the first 2 of which -- the Stomil Tire Plant No. 2 in Debica, and the Tire Plant in Plock -- will be able to fill all the requirements of the expanding automotive industry. 632/

The Stomil Tire Plant No. 2 in Debica is actually in existence. It was begun in March 1938 and completed in April 1939. It was constructed under the supervision of the General Tire and Rubber Company,

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Akron, Ohio, with equipment from the US and the UK. At the time of the invasion of Poland, it had all of its required basic equipment and 60 percent of its secondary equipment, such as tire-building and curing machines. The plant was built to manufacture 1,200 tires daily, but in 1939 it was not working at capacity, because of a lack of secondary equipment. Truck tires were the major part of production, and automobile tires were second. No bicycle tires were being produced. 633/ During World War II the plant was demolished, and reconstruction had to be begun from the foundations. The machinery in the reconstructed plant is in poor condition. It came from Germany in December 1948. The missing parts were replaced, and on 1 April 1949 the plant was put into operation. 634/

A new plant in Debica has been planned as part of the Six Year Plan (1950-55). It is to be equipped with the most up-to-date machinery, will have a capacity of 10,000 tons annually, and is expected to effect a fourfold increase in total tire output. 635/ This plant is under construction at present. 636/

The second of the above-mentioned plants, the Tire Plant in Plock, is still under construction. It is to be finished in 1955 and will produce tires and tubes. 637/

The third tire plant in Poland, the Stomil, "Staroleka" Rubber Products Plant, is located in Poznan/Staroleka. This factory was established by US capital and converted into a tire factory in 1929. During World War II the Germans controlled and enlarged it, and it is still being expanded. In 1947 the machinery which had been removed by the Germans in 1945 from the "Gentleman" State Rubber Industry Plant in Lodz was returned to Poland and mounted in the Stomil rubber plant in Poznan. 638/ Two new buildings were constructed at the plant in 1950. 639/ On 4 May 1950 the plant was established as a state corporation by order of the Ministry of Light Industry. 640/

Production at the Stomil "Staroleka" Rubber Products Plant increased tremendously from 1948 through 1952. In 1948 the plant was scheduled to produce 4,768 tons of rubber articles. This amount included tires and various other items produced from rubber. 641/ During 1952, 11,000 tons of first-quality motor vehicle tires were produced at the Stomil plant. Production of this quality of tire was to be increased to 14,000 tons in 1953. In order to achieve this, however, the plant must import machinery from Germany. 642/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

It has been reported that the plant is producing tires from natural and synthetic rubber. 643/ Buna synthetic rubber, which composes 75 percent of automobile tires and 25 percent of other products, is received regularly from East Germany. 644/

G. Rumania.

There are two plants in Rumania producing tires. The first of these, the Banloc Rubber Plant, is located in Baicoi. Approximately 1,600 to 1,800 workers are employed at the plant. 645/

The plant was erected in 1938 in cooperation with Goodrich. 646/ No indication is given as to who controlled the plant during World War II. Reports concerning production figures between 1947 and 1951 are vague and controversial. It is evident, however, that production did increase during that period. In 1951 the Banloc Plant started to produce armaments, and at present, under Soviet control, it manufactures tank treads, aircraft gas tanks, and tires. 647/ According to rumors, the plant was converted to the production of war materials in 1952. 648/ Whether rumored or actual fact, it appears that the factory at present is manufacturing goods contributing to war efforts.

Raw material, consisting of synthetic rubber, is supplied to the Banloc Rubber Plant by the USSR, because British supplies have been stopped. 649/ Products, however, are of inferior quality, the result of a lack of sufficient raw material since 1951. 650/

The entire production of tires is reserved for the army and state organizations. Only tires discarded by state enterprises, after 30,000 kilometers use, and renovated are released to the Rumanian public. An office of the Ministry of Industry and Commerce tightly controls the entire distribution of tires. 651/

Fabrica de Cauciuc Brasov (Rubber Factory), which is also known as Hanserex Sov, Semperit, and Scrap Enterprise, is the other tire plant in Rumania. It is located in Brasov and employs approximately 1,200 workers. 652/ The factory was a joint German-Rumanian company until August 1944, when it became Soviet property under the control and administration of CASBI. In 1946 the ABS took it over and now controls it. 653/ During World War II the plant suffered only slight damage from bombing and was able to continue production. At present it produces rubber tires for all types of vehicles, rubber boots, and other rubber products. 654/

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Buna rubber for production purposes is received from the USSR. Salvage rubber and raw rubber are also used. 655/ Natural crude rubber, a variation of crude rubber from rubber bushes grown in Rumania, was also delivered to the plant. 656/

There is no information available as to who receives the production from this plant.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX F

METHODOLOGY

I. Production.

Estimates of production of synthetic, natural, and reclaimed rubber in the European Satellites are derived from a variety of methods, including critical evaluation of plant data, plans, country statistics, press reports, and other related information.

Some estimates of recent production of synthetic and reclaimed rubber are extrapolations, on what is considered a reasonable curve, from known statistics. This method is used particularly for such countries as Bulgaria and Rumania, about which practically no current production data are available.

Production figures for natural rubber from herbs such as kok-saghyz have been taken either from reported production of plants and countries, as indicated in press and radio reports, or from one source. In most cases, there is as yet little reliable confirmation of such production, and until further research based on agricultural statistics is made, these production estimates must be carefully qualified.

II. Consumption.

Estimates of production of tires in the European Satellites have been derived from a variety of sources. Where plant or other data are insufficient to indicate production -- as, for example, in Bulgaria for the years 1946-47 -- figures were interpolated on what appears to be a reasonable curve.

A. Transportation Goods.

The consumption of rubber for transportation goods has been estimated on the basis of the average weight of a tire and tube. A somewhat lower factor for average weight has been used in estimating consumption for the European Satellites than was used in estimating such consumption for the USSR.* This lower factor was used to allow

* See CIA/RR 19, The Rubber Position of the Soviet Bloc, 19 Jan 1953. S, US OFFICIALS ONLY.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

for the smaller production of tires and the greater ratio of small-sized tires indicated by early statistics available for Poland and Czechoslovakia (the major producers of tires among the Satellites up to 1948) and by available information on the other Satellites.

The average weight of a tire and tube in the European Satellites ranges from 20 pounds in early years up to 30 pounds in 1953.

B. Nontransportation Goods.

Because the proportion of total rubber consumed by nontransportation goods varies among the European Satellites, no single percentage has been applied to obtain a consumption estimate for these uses. Current information, however, indicates that with increasing emphasis on tire production in all of the Satellites, the proportion consumed for nontransportation goods will continue to decrease gradually in future years, and probably between 40 and 55 percent of total rubber consumption will be for nontransportation goods, as it is in the UK and the US.

III. Trade.

Estimates of quantities of natural rubber imported by the Satellites are derived mainly from the export statistics of non-Soviet Bloc countries. They will not necessarily equal the total quantity of natural rubber imports available to a certain country in a given year, because the estimates do not take intra-Bloc trade into account. For this reason, the total quantity of natural rubber imports available to each country, as estimated by the International Rubber Study Group, is given in each table in Appendix C as the RSB (Rubber Statistical Bulletin) estimate. No RSB estimates are available for synthetic rubber.

It is noted that in most cases the RSB estimates for trade in natural rubber are lower than tonnages indicated in actual trade. Figures for imports of synthetic rubber are mainly intra-Soviet Bloc trade statistics, as observed in scattered reports, and are therefore incomplete. Figures for exports are statistics from reported shipments and are compiled from scattered reports.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX G

GAPS IN INTELLIGENCE

Available information about the rubber industry in East Germany is relatively detailed and comprehensive and provides reliable data upon which to base estimates. Information about the rubber industry in the other European Satellites, however, is fragmentary, is often unreliable, and constitutes the major general area in which intelligence is lacking.

The most important specific intelligence needs are as follows:

1. Data on the types of synthetic rubber produced and consumed by the various rubber and rubber-fabricating plants in the European Satellites.

2. Information on the manufacturing standards maintained in the European Satellites, including the extent to which the industry is forced to sacrifice quality to meet quotas.

3. Further evidence of the existence and extent of a Soviet Bloc economic policy of "country specialization" under which the various European Satellites are "assigned" the production of certain types of rubber and rubber goods and the consumption of certain raw materials and finished rubber products.

4. Additional information on the stockpiling of both rubber and rubber goods in the European Satellites. This information would be significant in arriving at estimates of Soviet Bloc intentions.

5. Data on the intra-Bloc trade in rubber and rubber goods. This kind of information is essential to any reliable estimates of total supply of rubber and rubber goods in the European Satellites.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

APPENDIX H

SOURCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
A - Completely reliable	Doc. - Documentary
B - Usually reliable	1 - Confirmed by other sources
C - Fairly reliable	2 - Probably true
D - Not usually reliable	3 - Possibly true
E - Not reliable	4 - Doubtful
F - Cannot be judged	5 - Probably false
	6 - Cannot be judged

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which will carry the field evaluation "Documentary" instead of a numerical grade.

All evaluations in this report are those appearing on the cited document.

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Next 21 Page(s) In Document Exempt

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500070001-6

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